Dangerous Waste Portion of the Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste

Change Control Log

Change Control Logs ensure that changes to this unit are performed in a methodical, controlled, coordinated and transparent manner. Each unit or section of the permit will have a "**Last Modification Date**" which represents the last date the unit or section has been modified. The "**Modification Number**" represents Ecology's method for tracking the different versions of the permit. This log will serve as an up to date record of modifications and version history of the unit. An individual unit change control log will be placed at the beginning of each unit so that changes to individual addendum of the unit are tracked and reflected.

Revision 8C last issue date **September 30, 2015**

Unit or Section	Last Modification Date	Modification Number
Attachments		
Hanford Facility Agreement and Consent Order	11/03/2015	
Hanford Facility Permit Legal Description	09/30/2011	
Security	9/30/2010	
Hanford Emergency Management Plan	07/17/2014	
Hanford Facility Personnel Training Program	09/30/2015	8c.2015.Q3
Recordkeeping and Reports	09/30/2015	8c.2015.Q3
EPA Policy on Remediation of Existing Wells	06/1990	
Hanford Well Maintenance and Inspection Plan	04/2014	
Permit Applicability Matrix	12/31/2014	
Strategy for Handling and Disposing of Purgewater	09/30/2010	
Part I and II		
Conditions	12/31/2015	8c.2015.Q3
Part III Operating Units		
242-A Evaporator	12/10/2014	
325 Hazardous Waste Treatment Units	09/30/2015	8c.2015.Q3
331-C Storage Unit	03/31/2011	
400 Area Waste Management Unit	09/30/2015	8c.2015.Q3
Integrated Disposal Facility (IDF)	09/30/2015	8c.2015.Q3
Liquid Effluent Retention Facility (LERF) & 200 Area Effluent Treatment Facility (ETF)	06/15/2015	

Unit or Section	Last Modification Date	Modification Number
PUREX	06/30/2012	
Waste Treatment and Immobilization Plant (WTP)	09/30/2015	8c.2015.Q3
Part IV Corrective Action		
100-NR-1	01/2007	
Part V Closure Units		
1301-N-Liquid Waste Disposal Facility	01/2007	
1324-N- Impoundment & 1324-NA Percolation Pond	06/30/2008	
1325-N Liquid Waste Disposal Facility	10/26/2005	
Part VI Post Closure Units		
183-H Solar Evaporation Basins	08/13/2013	
300 Area Process Trenches	10/1/2008	

INTRODUCTION

Where information regarding treatment, management, and disposal of the radioactive source, byproduct material, special nuclear material (as defined by the Atomic Energy Act of 1954, as amended) and/or the radionuclide component of mixed waste has been incorporated into this permit, it is not incorporated for the purpose of regulating the radiation hazards of such components under the authority of this permit or Chapter 70.105 RCW.

Pursuant to Chapter 70.105 RCW, the Hazardous Waste Management Act (HWMA) of 1976, as amended, Chapter 70.105D RCW, the Model Toxics Control Act (MTCA), and regulations promulgated there under by the Washington State Department of Ecology (hereafter called Ecology), codified in Chapter 173-303 Washington Administrative Code (WAC), Dangerous Waste Regulations, a Dangerous Waste Permit is issued to the United States Department of Energy (USDOE) - Richland Operations Office (RL) and Office of River Protection (ORP) [owner/operator], and its contractors [co-operators], Bechtel National, Incorporated (BNI), CH2MHILL Plateau Remediation Company (CHPRC), Mission Support Alliance, LLC (MSA)], Pacific Northwest National Laboratory (PNNL), Washington Closure Hanford, LLC (WCH), and Washington River Protection Solutions, LLC (WRPS) and hereafter called the Permittees, for the treatment, storage, and disposal of dangerous waste at the Hanford Facility.

This Dangerous Waste Permit, issued in conjunction with the United States Environmental Protection Agency's (hereafter called EPA) Hazardous and Solid Waste Amendments Portion of the Resource Conservation and Recovery Act (RCRA) Permit for the Treatment, Storage, and Disposal (TSD) of Hazardous Waste (HSWA Permit), constitutes the RCRA Permit for the Hanford Facility. Use of the term "Permit" within the Dangerous Waste Permit will refer to the Dangerous Waste Permit, while use of the term "Permit" within the HSWA Permit, will refer to the HSWA Permit. Use of the same term in both the Dangerous Waste Permit and the HSWA Permit, will have the standard meaning associated with the activities addressed by the permit in which the term is used. Such meanings will prevail, except where specifically stated otherwise.

The Permittees will comply with all terms and conditions set forth in this Permit and those portions of the Attachments that have been specifically incorporated into this Permit. When the Permit and the Attachments (except Permit Attachment 1) conflict, the wording of the Permit will prevail. The Permit is intended to be consistent with the terms and conditions of the Hanford Federal Facility Agreement and Consent Order (HFFACO, Permit Attachment 1). The Permittees will also comply with all applicable state regulations, including Chapter 173-303 WAC.

Applicable state regulations are those which are in effect on the date of issuance, or as specified in subsequent modifications of this Permit. In addition, applicable state regulations include any self-implementing statutory provisions and related regulations which, according to the requirements of the HWMA, as amended, or other law(s), are automatically applicable to the Permittees' dangerous waste management activities, notwithstanding the conditions of this Permit.

This Permit is based upon the Administrative Record, as required by WAC 173-303-840. The Permittees' failure in the application, or during the Permit issuance process, to fully disclose all relevant facts, or the Permittees' misrepresentation of any relevant facts at any time, will be grounds for the termination or modification of this Permit and/or initiation of an enforcement action, including criminal proceedings. The Permittees will inform Ecology of any deviation from the Permit conditions, or changes in the information on which the application is based, which would affect either the Permittees' ability to comply, or actual compliance with the applicable regulations or the Permit conditions, or which alters any condition of this Permit in any way.

Ecology will enforce all conditions of this Permit for which the State of Washington is authorized, or which are "state-only" provisions (i.e., conditions broader in scope or more stringent than the federal RCRA program). Any challenges of any Permit condition may be appealed in accordance with WAC 173-303-845. In the event that any Permit condition is challenged by any Permittee under WAC 173-303-845, Ecology may stay any such Permit condition as it pertains to all Permittees, in accordance with the same terms of any stay it grants to the challenging Permittee. If such a stay is granted, it will constitute a "stay by the issuing agency" within the meaning of RCW 43.21B.320(1).

This Permit has been developed to allow a step-wise permitting process of the Hanford Facility to ensure the proper implementation of the HFFACO. In order to accomplish this, this Permit consists of six (6) parts.

Part I, Standard Conditions, contains conditions which are similar to those appearing in all dangerous waste permits.

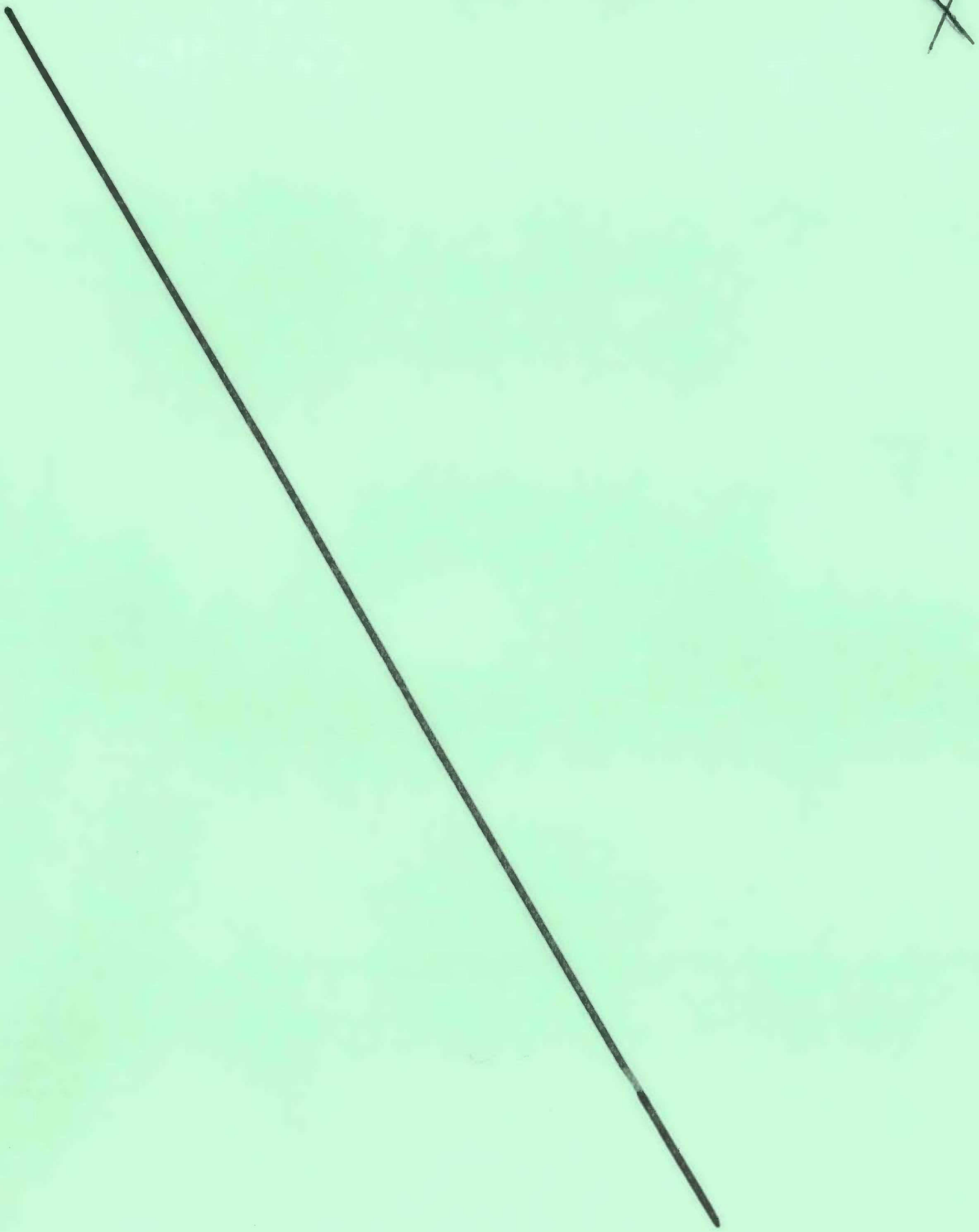
Part II, General Facility Conditions, combines typical dangerous waste permit conditions with those conditions intended to address issues specific to the Hanford Facility. Where appropriate, the general facility conditions apply to all final status dangerous waste management activities at the Facility. Where appropriate, the general facility conditions also address dangerous waste management activities which may not be directly associated with distinct TSD units, or which may be associated with many TSD units (i.e., spill reporting, training, contingency planning, etc.). Part II also includes conditions that address corrective action at solid waste management units and areas of concern.

Part III, Unit-Specific Conditions for Operating Units, contains those Permit requirements that apply to each individual TSD unit operating under final status. Conditions for each TSD unit are found in a chapter dedicated to that TSD unit. These unit-specific chapters contain references to Standard Conditions (Part I) and General Conditions (Part II), as well as additional requirements which are intended to ensure that each TSD unit is operated in an efficient and environmentally protective manner. Additional requirements may also be added when an operating unit ceases operations and undergoes closure.

Part IV, Unit-Specific Conditions for Corrective Action, contains Permit conditions for releases from Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs). For past practice units identified in the HFFACO as either Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Past Practice units (CPP units) or combined Resource Conservation and Recovery Act-Comprehensive Environmental Response, Compensation and Liability Act Past Practice units (R-CPP units), the corrective action conditions are structured around reliance on, the investigation and cleanup requirements established under the HFFACO. For TSD units identified in the HFFACO, the corrective action conditions contemplate use of closure and post-closure processes to satisfy corrective action.

Part V, Unit-Specific Conditions for Units Undergoing Closure, contains those requirements which apply to those specific TSD units, included in this part, that are undergoing closure. In accordance with Section 5.3 of the Action Plan of the HFFACO, all TSD units that undergo closure, irrespective of permit status, will be closed pursuant to the authorized State Dangerous Waste Program in accordance with WAC 173-303-610. Requirements for each TSD unit undergoing closure are found in a chapter dedicated to that TSD unit. These unit-specific chapters contain references to Standard Conditions (Part I) and General Conditions (Part II), as well as additional requirements which are intended to ensure that each TSD unit is closed in an efficient and environmentally protective manner.

Part VI, Unit-Specific Conditions for Units in Post-Closure, contains those requirements which apply to those specific units in this part that have completed modified or landfill closure requirements, and now only need to meet Post-Closure Standards. As set forth in Section 5.3 of the Action Plan of the HFFACO, certain TSD units will be permitted for post-closure care pursuant to the authorized State Dangerous Waste Program (173-303 WAC) and the Hazardous and Solid Waste Amendments. Requirements for each unit undergoing post-closure care are found in a chapter, within this part, dedicated to that unit. These unit specific chapters may contain references to Standard Conditions (Part I) and General Conditions (Part II), as well as the unit specific conditions, all of which are intended to ensure the unit is managed in an efficient, environmentally protective manner.



DANGEROUS WASTE PORTION OF THE RESOURCE CONSERVATION AND RECOVERY ACT PERMIT FOR THE TREATMENT, STORAGE, AND DISPOSAL OF DANGEROUS WASTE

Washington State Department of Ecology
Nuclear Waste Program
3100 Port of Benton Boulevard
Richland, Washington 99354
Telephone: 509-372-7950

Issued in accordance with the applicable provisions of the Hazardous Waste Management Act, Chapter 70.105 Revised Code of Washington (RCW), and the regulations promulgated there under in Chapter 173-303 Washington Administrative Code (WAC).

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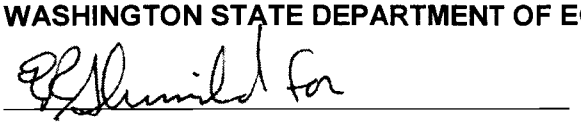
This Permit as modified on October 22, 2007, will remain in effect until reissuance of the September 27, 2004 Permit, unless revoked and reissued under WAC 173-303-830(3), terminated under WAC 173-303-830(5), or continued in accordance with WAC 173-303-806(7).

ISSUED BY:
WASHINGTON STATE DEPARTMENT OF ECOLOGY



Date: 10/17/07

Jane A. Hedges, Program Manager

Nuclear Waste Program, Department of Ecology

DEFINITIONS

Except with respect to those terms specifically defined below, all definitions contained in the HFFACO, May 1989, as amended, and in WAC 173-303-040 and other portions of Chapter 173-303 WAC are hereby incorporated, in their entirety, by reference into this Permit. For terms defined in both Chapter 173-303 WAC and the HFFACO, the definitions contained in Chapter 173-303 WAC will control within this Permit. Nonetheless, this Permit is intended to be consistent with the HFFACO.

Where terms are not defined in the regulations, the Permit, or the HFFACO, a standard dictionary reference, or the generally accepted scientific or industrial meaning of the terms will define the meaning associated with such terms.

As used in this Permit, words in the masculine gender also include the feminine and neuter genders, words in the singular include the plural, and words in the plural include the singular.

The following definitions apply throughout this Permit:

The term "**Area of Concern**" means any area of the Facility where a release of dangerous waste or dangerous constituents has occurred, is occurring, is suspected to have occurred, or threatens to occur.

The term "**Contractor(s)**" means, unless specifically identified otherwise in this Permit, or Attachments, Bechtel National, Inc. (BNI), CH2M HILL Plateau Remediation Company, Inc. (CHPRC), Mission Support Alliance, LLC (MSA), Pacific Northwest National Laboratory (PNNL), Washington Closure Hanford, LLC (WCH), and Washington River Protection Solutions, LLC (WRPS).

The term "**Critical Systems**" as applied to determining whether a Permit modification is required, means those specific portions of a TSD unit's structure, or equipment, whose failure could lead to the release of dangerous waste into the environment, and/or systems which include processes which treat, transfer, store, or dispose of regulated wastes. A list identifying the critical systems of a specific TSD unit may be developed and included in Part III, V, and/or VI of this Permit. In developing a critical system list, or in the absence of a critical system list, WAC 173-303-830 Modifications will be considered.

The term "**Dangerous Constituent**" means any constituent identified in WAC 173-303-9905 or 40 CFR Part 264 Appendix IX , any constituent which caused a waste to be listed or designated as dangerous under Chapter 173-303 WAC, and any constituents within the meaning of hazardous substance at RCW 70.105D.020(7).

The term "**Dangerous Waste**" means those solid wastes designated under Chapter 173-303 WAC as dangerous or extremely hazardous waste. As used in the Permit, the phrase "dangerous waste" will refer to the full universe of wastes regulated by Chapter 70.105 RCW and Chapter 173-303 WAC (including dangerous waste, hazardous waste, extremely hazardous waste, mixed waste, and acutely hazardous waste).

The term "**Days**" means calendar days, unless specifically identified otherwise. Any submittal, notification, or recordkeeping requirement that would be due, under the Conditions of this Permit, on a Saturday, Sunday, or federal, or state holiday, will be due on the following business day, unless specifically stated otherwise in the Permit.

The term "**Director**" means the Director of the Washington State Department of Ecology, or a designated representative. The Program Manager of the Nuclear Waste Program (with the address as specified on page one [1] of this Permit) is a duly authorized and designated representative of the Director for purposes of this Permit.

The term "**Ecology**" means the Washington State Department of Ecology (with the address as specified on page one [1] of this Permit).

The term "**Facility**" means all contiguous land, structures, other appurtenances, and improvements on the land used for recycling, reusing, reclaiming, transferring, storing, treating, or disposing of dangerous waste. The legal and physical description of the Facility is set forth in Permit Attachment 2.

The term "**Facility**" for the purposes of corrective action under Permit Condition II.Y, means all contiguous property under the control of the Permittees and all property within the meaning of "facility" at RCW 70.105D.020(3) as set forth in Permit Attachment 2.

The term "**HFFACO**" means the Hanford Federal Facility Agreement and Consent Order, as amended (Commonly referred to as Tri-Party Agreement [TPA]).

The term "**Permittees**" means the United States Department of Energy (owner/operator), Bechtel National, Inc. (Co-operator), CH2M HILL Plateau Remediation Company (Co-operator), Mission Support Alliance, LLC (MSA), Pacific Northwest National Laboratory (Co-operator), Washington Closure Hanford, LLC (Co-operator), Washington River Protection Solutions, LLC.

The term "**Permittees**" for purposes of corrective action under Permit Condition II.Y means only the United States Department of Energy (owner/operator).

The term "**Raw Data**" means the initial value of analog or digital instrument output, and/or manually recorded values obtained from measurement tools or personal observation. These values are converted into reportable data (e.g., concentration, percent moisture) via automated procedures and/or manual calculations.

The term "**RCRA Permit**" means the Dangerous Waste Portion of the RCRA Permit for the Treatment, Storage, and Disposal of Dangerous Waste (Dangerous Waste Permit) issued by the Washington State Department of Ecology, pursuant to Chapter 70.105 RCW and Chapter 173-303 WAC, coupled with the HSWA Portion of the RCRA Permit for the Treatment, Storage, and Disposal of Hazardous Waste (HSWA Permit) issued by EPA, Region 10, pursuant to 42 U.S.C. 6901 et seq. and 40 CFR Parts 124 and 270.

The term "**Reasonable Times**" means normal business hours; hours during which production, treatment, storage, construction, disposal, or discharge occurs, or times when Ecology suspects a violation requiring immediate inspection.

The term "**Release**" means any intentional or unintentional spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of dangerous constituents into the environment and includes the abandonment or discarding of barrels, containers, and other receptacles containing dangerous waste or dangerous constituents, and includes any releases within the meaning of release at RCW 70.105D.020(20).

The term "**Significant Discrepancy**" in regard to a manifest or shipping paper, means a discrepancy between the quantity or type of dangerous waste designated on the manifest, or shipping paper, and the quantity or type of dangerous waste a TSD unit actually receives. A significant discrepancy in quantity is a variation greater than ten (10) percent in weight for bulk quantities (e.g., tanker trucks, railroad tank cars, etc.), or any variation in piece count for nonbulk quantities (i.e., any missing container or package would be a significant discrepancy). A significant discrepancy in type is an obvious physical or chemical difference which can be discovered by inspection or waste analysis (e.g., waste solvent substituted for waste acid).

The term "**Solid Waste Management Unit (SWMU)**" means any discernible location at the Facility where solid wastes have been placed at any time, irrespective of whether the location was intended for the management of solid or dangerous waste, and includes any area at the Facility at which solid wastes have been routinely and systematically released (for example through spills), and includes dangerous waste treatment, storage, and disposal units.

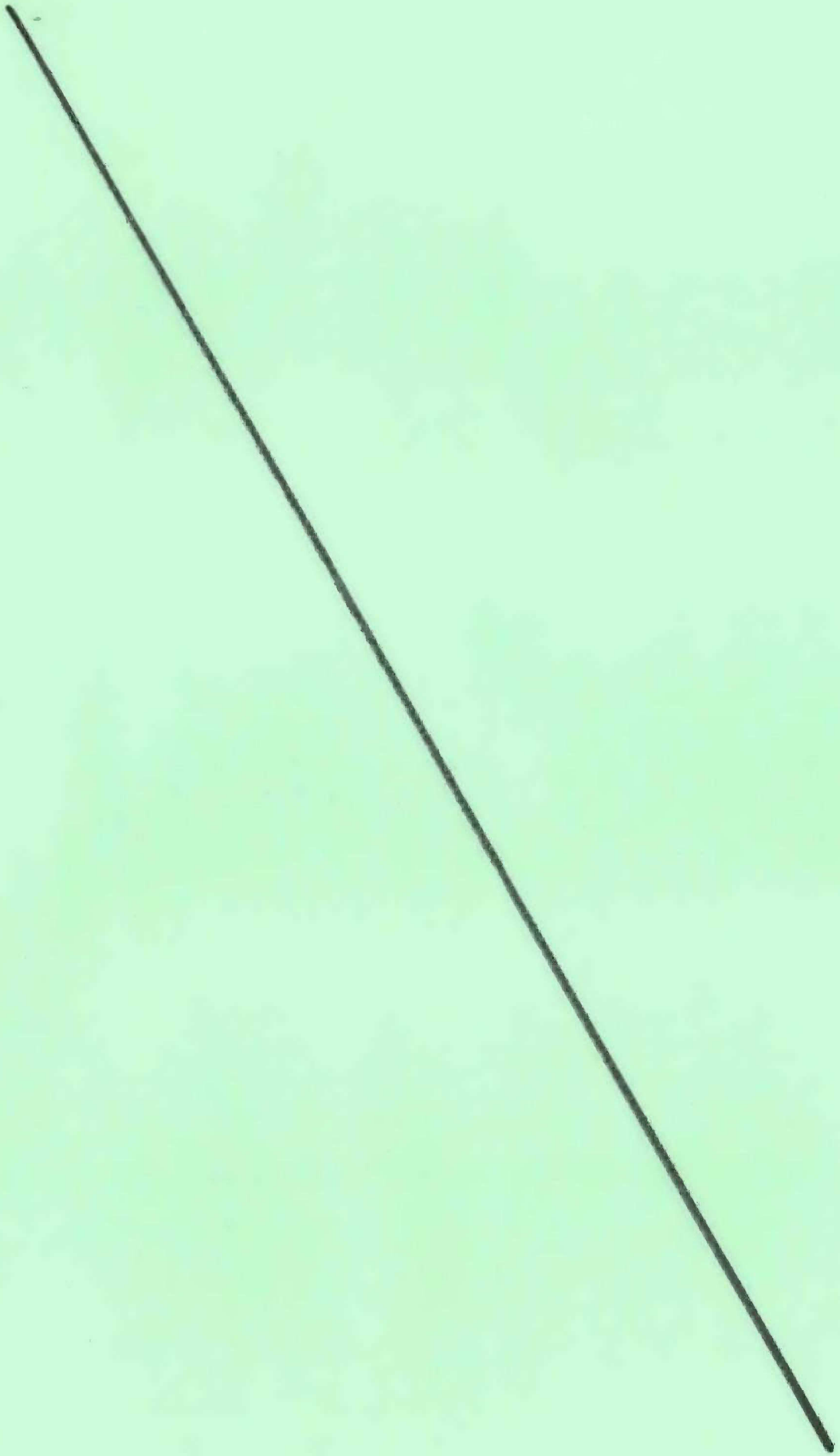
The term **"Unit" or "TSD unit"**, as used in Parts I through VI of this Permit, means the contiguous area of land on or in which dangerous waste is placed, or the largest area in which there is a significant likelihood of mixing dangerous waste constituents in the same area. A TSD unit, for purposes of this Permit, is a subgroup of the Facility which has been identified in a Hanford Facility Dangerous Waste Part A Form.

ACRONYMS

ALARA	As Low As Reasonably Achievable
AMSF	Alkali Metal Storage Facility
APDS	Ash Pit Demolition Site
APP	Used to Denote Appendix Page Numbers
APT	Area Process Trenches
ARAR	Applicable, Relevant, and Appropriate Requirements
BNI	Bechtel National, Inc
BPDS	Borrow Pit Demolition Site
CD/RR	Chemical Disposal/Recycle Request
CERCLA	Comprehensive Environmental Response Compensation and Liability Act of 1980 (as Amended by the Superfund Reauthorization Act of 1986)
CFR	Code of Federal Regulations
CHPRC	CH2M HILL Plateau Remediation Company
CIP	Construction Inspection Plan
CLARC	Cleanup Levels and Risk Calculations
CLP	Contract Laboratory Program
COC	Chemical Contaminants of Concern
CPP	CERCLA Past Practice
USDOE-RL	U.S. Department of Energy, Richland Operations Office
USDOE-ORP	U.S. Department of Energy, Office of River Protection
DQO	Data Quality Objective
DSC	Differential Scanning Colorimetry
EC	Emergency Coordinator
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ERA	Expedited Response Action
ETF	200 Area Effluent Treatment Facility
HFFACO	Hanford Federal Facility Agreement and Consent Order
GW	Ground Water
HPADS	Hanford Patrol Academy Demolition Site
HSWA	Hazardous and Solid Waste Amendments of 1984
HWMA	Hazardous Waste Management Act
ID	Identification
IRM	Interim Remedial Measure

1	LDR	Land Disposal Restrictions
2	LERF	Liquid Effluent Retention Facility
3	LSFF	105-DR Large Sodium Fire Facility
4	MSA	Mission Support Alliance, LLC
5	MTCA	Model Toxics Control Act
6	OSWER	Office of Solid Waste and Emergency Response
7	PNNL	Pacific Northwest National Laboratory
8	QA	Quality Assurance
9	QAPP	Quality Assurance Project Plan
10	QC	Quality Control
11	RCRA	Resource Conservation and Recovery Act of 1976
12	RCW	Revised Code of Washington
13	ROD	Record of Decision
14	RPD	Relative Percent Difference
15	RPP	RCRA Past Practice
16	SAP	Sampling and Analysis Plan
17	SARA	Superfund Amendments and Reauthorization Act of 1986
18	SCD	Security Control Devices
19	SHLWS	Simulated High Level Waste Slurry
20	SOP	Standard Operating Procedure
21	SWMU	Solid Waste Management Unit
22	TCLP	Toxicity Characteristic Leaching Procedure
23	TSD	Treatment, Storage, and/or Disposal
24	USDOE	United States Department of Energy
25	U.S.C.	United States Code
26	WAC	Washington Administrative Code
27	WAP	Waste Analysis Plan
28	WCH	Washington Closure Hanford, LLC
29	WRPS	Washington River Protection Solutions, LLC
30	WTP	Waste Treatment and Immobilization Plant
31	183-H	183-H Solar Evaporation Basins
32	242-A	242-A Evaporator
33	300 APT	300 Area Process Trenches
34	300 ASE	300 Area Solar Evaporator
35	303-K	303-K Storage Facility

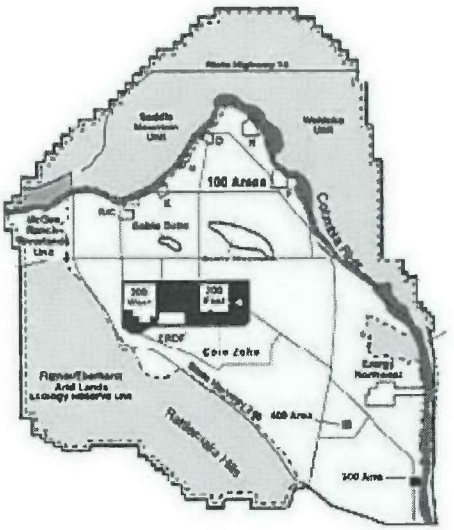
1	305-B	305-B Storage Facility
2	325 HWTUs	325 Hazardous Waste Treatment Units
3	616-NRDWSF	616 Nonradioactive Dangerous Waste Storage Facility
4		



Hanford Facility
Resource Conservation and Recovery Act
Permit, Dangerous Waste Portion

Revision 8C

For the Treatment, Storage, and Disposal of Dangerous Waste



Washington State Department of Ecology
Nuclear Waste Program

December 2014

For additional copies of this permit contact:

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Richland, Washington 99354-1670
509-372-7950

The Department of Ecology is an equal-opportunity agency and does not discriminate on the basis of race, creed, color disability, age, religion, national origin, sex, marital status, disabled-veteran status, Vietnam-era veteran status or sexual orientation.

For more information or if you have special accommodation needs, please contact the Nuclear Waste Program at (509) 372-7950.

Department of Ecology Headquarters telecommunications device for the deaf (TDD) number is: (360) 407-6006

DANGEROUS WASTE PORTION OF THE RESOURCE CONSERVATION AND RECOVERY ACT PERMIT FOR THE TREATMENT, STORAGE, AND DISPOSAL OF DANGEROUS WASTE

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Nuclear Waste Program
3100 Port of Benton Boulevard
Richland, Washington 99354
Telephone: 509-372-7950

Issued in accordance with the applicable provisions of the Hazardous Waste Management Act, Chapter 70.105 Revised Code of Washington (RCW), and the regulations promulgated there under in Chapter 173-303 Washington Administrative Code (WAC).

ISSUED TO:

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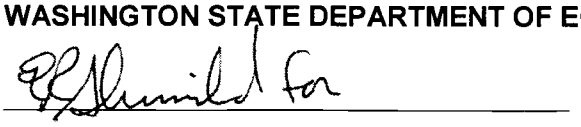
ISSUED BY:
WASHINGTON STATE DEPARTMENT OF ECOLOGY



Date: 10/17/07

Jane A. Hedges, Program Manager

Nuclear Waste Program, Department of Ecology

DANGEROUS WASTE PORTION OF THE RESOURCE CONSERVATION AND RECOVERY ACT PERMIT FOR THE TREATMENT, STORAGE, AND DISPOSAL OF DANGEROUS WASTE

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LIST OF ATTACHMENTS

The following listed documents are attached in their entirety. However, only those portions of the attachments specified in Parts I through VI are enforceable conditions of this Permit and subject to the permit modification requirements of Permit Condition I.C.3. Changes to portions of the attachments, which are not subject to the permit modification process, will be addressed in accordance with Permit Conditions I.E.8, I.E.11, I.E.13, I.E.15, through I.E.20, and I.E.22. The Washington State Department of Ecology (Ecology) has, as deemed necessary, modified specific language in these attachments. These modifications are described in the conditions (Parts I through VI), and thereby supersede the language of the attachment.

Attachment 1	Hanford Federal Facility Agreement and Consent Order, (as amended) http://www.hanford.gov/tpa/coverpg.htm
Attachment 2	Hanford Facility Legal Description, from Class 1 modification, dated January 7, 1999
Attachment 3	Security, dated September 30, 2010
Attachment 4	*Hanford Emergency Management Plan*, DOE/RL-94-02 Revision 6, as amended and approved modifications
Attachment 5	Hanford Facility Personnel Training Program, dated September 30, 2015
Attachment 6	Reports and Records, dated September 30, 2015
Attachment 7	Policy on Remediation of Existing Wells and Acceptance Criteria for RCRA and CERCLA, June 1990
Attachment 8	Hanford Well Maintenance and Inspection Plan, HNF-56398, Revision 1, April 10, 2014
Attachment 9	Permit Applicability Matrix, dated December 31, 2014
Attachment 10	Purgewater Management Plan, July 1990

INTRODUCTION

Where information regarding treatment, management, and disposal of the radioactive source, byproduct material, special nuclear material (as defined by the Atomic Energy Act of 1954, as amended) and/or the radionuclide component of mixed waste has been incorporated into this permit, it is not incorporated for the purpose of regulating the radiation hazards of such components under the authority of this permit or Chapter 70.105 RCW.

Pursuant to Chapter 70.105 RCW, the Hazardous Waste Management Act (HWMA) of 1976, as amended, Chapter 70.105D RCW, the Model Toxics Control Act (MTCA), and regulations promulgated there under by the Washington State Department of Ecology (hereafter called Ecology), codified in Chapter 173-303 Washington Administrative Code (WAC), Dangerous Waste Regulations, a Dangerous Waste Permit is issued to the United States Department of Energy (USDOE) - Richland Operations Office (RL) and Office of River Protection (ORP) [owner/operator], and its contractors [co-operators], Bechtel National, Incorporated (BNI), CH2MHILL Plateau Remediation Company (CHPRC), Mission Support Alliance, LLC (MSA)], Pacific Northwest National Laboratory (PNNL), Washington Closure Hanford, LLC (WCH), and Washington River Protection Solutions, LLC (WRPS) and hereafter called the Permittees, for the treatment, storage, and disposal of dangerous waste at the Hanford Facility.

This Dangerous Waste Permit, issued in conjunction with the United States Environmental Protection Agency's (hereafter called EPA) Hazardous and Solid Waste Amendments Portion of the Resource Conservation and Recovery Act (RCRA) Permit for the Treatment, Storage, and Disposal (TSD) of Hazardous Waste (HSWA Permit), constitutes the RCRA Permit for the Hanford Facility. Use of the term "Permit" within the Dangerous Waste Permit will refer to the Dangerous Waste Permit, while use of the term "Permit" within the HSWA Permit, will refer to the HSWA Permit. Use of the same term in both the Dangerous Waste Permit and the HSWA Permit, will have the standard meaning associated with the activities addressed by the permit in which the term is used. Such meanings will prevail, except where specifically stated otherwise.

The Permittees will comply with all terms and conditions set forth in this Permit and those portions of the Attachments that have been specifically incorporated into this Permit. When the Permit and the Attachments (except Permit Attachment 1) conflict, the wording of the Permit will prevail. The Permit is intended to be consistent with the terms and conditions of the Hanford Federal Facility Agreement and Consent Order (HFFACO, Permit Attachment 1). The Permittees will also comply with all applicable state regulations, including Chapter 173-303 WAC.

Applicable state regulations are those which are in effect on the date of issuance, or as specified in subsequent modifications of this Permit. In addition, applicable state regulations include any self-implementing statutory provisions and related regulations which, according to the requirements of the HWMA, as amended, or other law(s), are automatically applicable to the Permittees' dangerous waste management activities, notwithstanding the conditions of this Permit.

This Permit is based upon the Administrative Record, as required by WAC 173-303-840. The Permittees' failure in the application, or during the Permit issuance process, to fully disclose all relevant facts, or the Permittees' misrepresentation of any relevant facts at any time, will be grounds for the termination or modification of this Permit and/or initiation of an enforcement action, including criminal proceedings. The Permittees will inform Ecology of any deviation from the Permit conditions, or changes in the information on which the application is based, which would affect either the Permittees' ability to comply, or actual compliance with the applicable regulations or the Permit conditions, or which alters any condition of this Permit in any way.

Ecology will enforce all conditions of this Permit for which the State of Washington is authorized, or which are "state-only" provisions (i.e., conditions broader in scope or more stringent than the federal RCRA program). Any challenges of any Permit condition may be appealed in accordance with WAC 173-303-845. In the event that any Permit condition is challenged by any Permittee under WAC 173-303-845, Ecology may stay any such Permit condition as it pertains to all Permittees, in accordance with the same terms of any stay it grants to the challenging Permittee. If such a stay is granted, it will constitute a "stay by the issuing agency" within the meaning of RCW 43.21B.320(1).

This Permit has been developed to allow a step-wise permitting process of the Hanford Facility to ensure the proper implementation of the HFFACO. In order to accomplish this, this Permit consists of six (6) parts.

Part I, Standard Conditions, contains conditions which are similar to those appearing in all dangerous waste permits.

Part II, General Facility Conditions, combines typical dangerous waste permit conditions with those conditions intended to address issues specific to the Hanford Facility. Where appropriate, the general facility conditions apply to all final status dangerous waste management activities at the Facility. Where appropriate, the general facility conditions also address dangerous waste management activities which may not be directly associated with distinct TSD units, or which may be associated with many TSD units (i.e., spill reporting, training, contingency planning, etc.). Part II also includes conditions that address corrective action at solid waste management units and areas of concern.

Part III, Unit-Specific Conditions for Operating Units, contains those Permit requirements that apply to each individual TSD unit operating under final status. Conditions for each TSD unit are found in a chapter dedicated to that TSD unit. These unit-specific chapters contain references to Standard Conditions (Part I) and General Conditions (Part II), as well as additional requirements which are intended to ensure that each TSD unit is operated in an efficient and environmentally protective manner. Additional requirements may also be added when an operating unit ceases operations and undergoes closure.

Part IV, Unit-Specific Conditions for Corrective Action, contains Permit conditions for releases from Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs). For past practice units identified in the HFFACO as either Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Past Practice units (CPP units) or combined Resource Conservation and Recovery Act-Comprehensive Environmental Response, Compensation and Liability Act Past Practice units (R-CPP units), the corrective action conditions are structured around reliance on, the investigation and cleanup requirements established under the HFFACO. For TSD units identified in the HFFACO, the corrective action conditions contemplate use of closure and post-closure processes to satisfy corrective action.

Part V, Unit-Specific Conditions for Units Undergoing Closure, contains those requirements which apply to those specific TSD units, included in this part, that are undergoing closure. In accordance with Section 5.3 of the Action Plan of the HFFACO, all TSD units that undergo closure, irrespective of permit status, will be closed pursuant to the authorized State Dangerous Waste Program in accordance with WAC 173-303-610. Requirements for each TSD unit undergoing closure are found in a chapter dedicated to that TSD unit. These unit-specific chapters contain references to Standard Conditions (Part I) and General Conditions (Part II), as well as additional requirements which are intended to ensure that each TSD unit is closed in an efficient and environmentally protective manner.

Part VI, Unit-Specific Conditions for Units in Post-Closure, contains those requirements which apply to those specific units in this part that have completed modified or landfill closure requirements, and now only need to meet Post-Closure Standards. As set forth in Section 5.3 of the Action Plan of the HFFACO, certain TSD units will be permitted for post-closure care pursuant to the authorized State Dangerous Waste Program (173-303 WAC) and the Hazardous and Solid Waste Amendments. Requirements for each unit undergoing post-closure care are found in a chapter, within this part, dedicated to that unit. These unit specific chapters may contain references to Standard Conditions (Part I) and General Conditions (Part II), as well as the unit specific conditions, all of which are intended to ensure the unit is managed in an efficient, environmentally protective manner.

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UNIT STATUS TABLE

Permit Revision	Revision Date	Units Incorporated
Permit Revision 0	8/29/94	616 NDWSF, 305-B Storage Facility, 183-H SEB, 300 ASE, 2727-S, NRDWSF
Permit Revision 1	4/28/95	Simulated High-Level Waste Slurry, 218-E-9 Borrow Pit Demo Site, 200 W Area Ash Pit Demo Site, 2101-M Pond, 216-B-3 Expansion Ponds
Permit Revision 2	8/29/95	Hanford Patrol Academy Demolition Site, 105-DR Large Sodium Fire Facility, 304 Concretion Facility
Permit Revision 3	11/25/96	PUREX Storage Tunnels, 4843 Alkali Metal Storage Facility, 3718-F Alkali Metal Treatment & Storage Facility, 303-K Storage Facility, 300 APT
Permit Revision 4	1/28/98	LERF & 200 Area ETF, 242-A Evaporator, 325 HWTUs
Permit Revision 5	5/18/99	100 D Ponds, 1301-N & 1325-Liquid Waste Disposal Facility, 1324-N Surface Impoundment, 1324-NA Percolation Pond
Permit Revision 6	3/28/00	Permit Condition II.Y, Corrective Action
Permit Revision 7	2/27/01	Waste Treatment & Immobilization Plant, 300 Area WATS
Permit Revision 8	9/23/04	No new units, modification updates
Permit Revision 8A	3/6/06	Integrated Disposal Facility
Permit Revision 8B	1/2007	331-C Storage Unit, PFP Treatment Unit, 241-Z Treatment & Storage Tanks, 303-M Oxide Facility
Permit Revision 8C	8/2007	400 Area Waste Management Unit, 224-T TRUSAF

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UNIT	Permit Revision		Comments/History
	Incorporated	Retired	
PART III, OPERATING UNITS			
616 Non-Radioactive Dangerous Waste Storage Facility	Rev. 6	Rev. 7	Closed, 9/5/01
242-A Evaporator	Rev. 4		
305-B Storage Facility	Rev. 0		Closed, 7/2/07
325 Hazardous Waste Treatment Units	Rev. 4		RLWT procedural closure, 9/04
LERF & 200 Area ETF	Rev. 4		
PUREX Storage Tunnels	Rev. 3		
Waste Treatment and Immobilization Plant	Rev. 7		Permitted unit under construction
Integrated Disposal Facility	Rev. 8A		

UNIT	Permit Revision		Comments/History
	Incorporated	Retired	
331-C Storage Unit	Rev. 8B		
400 Area Waste Management Unit	Rev. 8C		
PART IV, CORRECTIVE ACTION			
100-NR-1 Operable Unit	Rev. 6		
100-NR-2 Operable Unit	Rev. 6	Rev. 8C	Retired, 9/30/09
PART V, UNDERGOING CLOSURE UNITS			
100-D Ponds	Rev. 5	Rev. 6	Closed, 8/9/99
105 DR Large Sodium Fire Facility	Rev. 2	Rev. 6	Closed, 7/1/04
1301-N Liquid Waste Disposal Facility	Rev. 5		
1324-N Surface Impoundment	Rev. 5		
1324-NA Percolation Pond	Rev. 5		
1325-N Liquid Waste Disposal Facility	Rev. 5		
200 West Area Ash Pit Demo Site	Rev. 1	Rev. 6	Closed, 11/28/95
2101-M Pond	Rev. 1	Rev. 6	Closed, 11/28/95
216-B-3 Expansion Ponds	Rev. 1	Rev. 6	Closed, 7/31/95
218-E-8 Borrow Demolition Site	Rev. 1	Rev. 6	Closed, 11/28/95
2727-S Storage Facility	Rev. 0	Rev. 6	Closed, 7/31/95
300 Area Solvent Evaporator	Rev. 0	Rev. 6	Closed, 7/31/95
300 Area Waste Acid Treatment System	Rev. 6	Rev. 8B	Closed, 1/21/05
303-K Storage Facility	Rev. 4	Rev. 6	Closed, 7/22/02
304 Concretion Facility	Rev. 2	Rev. 6	Closed, 1/21/96
311 Tanks (includes 300 Area WATS)	Rev. 6	Rev. 7	Closed, 5/20/02
3718-F Alkali Metal Treatment /Storage	Rev. 3	Rev. 6	Closed, 8/4/98
4843 Alkali Metal Storage Facility	Rev. 3	Rev. 6	Closed, 4/14/97
Hanford Patrol Academy Demo Site	Rev. 2	Rev. 6	Closed, 11/28/95
Simulated High Level Waste Slurry	Rev. 1	Rev. 6	Closed, 9/6/95
PFP Treatment Unit (HA-20MB)	Rev. 8B	Rev. 8B	Closed 2/8/05
241-Z Treatment and Storage Tanks	Rev. 8B	Rev. 8B	Closed 2/22/07
303-M Oxide Facility	Rev. 8B	Rev. 8B	Closed 6/15/06
224-T Transuranic Waste Storage and Assay Facility	Rev. 8C	Rev. 8C	Closed 11/12/08

UNIT	Permit Revision		Comments/History
	Incorporated	Retired	
PART VI, POSTCLOSURE UNITS			
183-H Solar Evaporation Basin	Rev 4		
300 Area Process Trenches	Rev 3		
PROCEDURALLY CLOSED			
216-U-12 Crib	N/A	N/A	Closed 7/19/07
221-T Test Facility	N/A	N/A	Closed 2/22/99
2727-WA SRE Sodium Storage Bldg	N/A	N/A	Closed 2/22/99
324 Pilot Plant	N/A	N/A	Closed 6/9/97
332 Storage Facility	N/A	N/A	Closed 4/21/97
437 Maintenance and Storage Facility	N/A	N/A	Closed 9/11/03
Biological Treatment Test Facilities	N/A	N/A	Closed12/10/96
Physical/Chemical Treatment Test Facilities	N/A	N/A	Closed 5/13/96
Sodium Storage/Sodium Reaction	N/A	N/A	Closed 9/17/03
Thermal Treatment Test Facilities	N/A	N/A	Closed 5/13/96
TO BE INCORPORATED			
1706-KE Waste Treatment System			
207-A South Retention Basin			
216-A-29 Ditch			
216-A-36B Crib			
216-A-37-1 Crib			
216-B-3 Main Pond			
216-B-63 Trench			
216-S-10 Pond & Ditch			
222-S Dangerous & Mixed Waste TSD Unit			
241-CX Tank System			
600 Area Purgewater Storage and Treatment Facility			
Central Waste Complex			
Contact Handled Transuranic Mixed Waste Packaging and Interim Storage Facility			

UNIT	Permit Revision		Comments/History
	Incorporated	Retired	
DST System/204-AR Waste Unloading Station			
Grout Treatment Facility			
Hexone Storage & Treatment Facility			
IHLW Interim Storage/Canister Storage Building			
Low-Level Burial Grounds			
Nonradioactive Dangerous Waste Landfill			
Single-Shell Tank System			
T Plant Complex			
Waste Encapsulation and Storage Facility			
Waste Receiving and Processing Facility			
TRANSITION UNDER HFFACO ACTION PLAN, SECTION 8 (Will not be incorporated into Permit)			
B Plant Complex			
PUREX Plant			

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DEFINITIONS

Except with respect to those terms specifically defined below, all definitions contained in the HFFACO, May 1989, as amended, and in WAC 173-303-040 and other portions of Chapter 173-303 WAC are hereby incorporated, in their entirety, by reference into this Permit. For terms defined in both Chapter 173-303 WAC and the HFFACO, the definitions contained in Chapter 173-303 WAC will control within this Permit. Nonetheless, this Permit is intended to be consistent with the HFFACO.

Where terms are not defined in the regulations, the Permit, or the HFFACO, a standard dictionary reference, or the generally accepted scientific or industrial meaning of the terms will define the meaning associated with such terms.

As used in this Permit, words in the masculine gender also include the feminine and neuter genders, words in the singular include the plural, and words in the plural include the singular.

The following definitions apply throughout this Permit:

The term "**Area of Concern**" means any area of the Facility where a release of dangerous waste or dangerous constituents has occurred, is occurring, is suspected to have occurred, or threatens to occur.

The term "**Contractor(s)**" means, unless specifically identified otherwise in this Permit, or Attachments, Bechtel National, Inc. (BNI), CH2M HILL Plateau Remediation Company, Inc. (CHPRC), Mission Support Alliance, LLC (MSA), Pacific Northwest National Laboratory (PNNL), Washington Closure Hanford, LLC (WCH), and Washington River Protection Solutions, LLC (WRPS).

The term "**Critical Systems**" as applied to determining whether a Permit modification is required, means those specific portions of a TSD unit's structure, or equipment, whose failure could lead to the release of dangerous waste into the environment, and/or systems which include processes which treat, transfer, store, or dispose of regulated wastes. A list identifying the critical systems of a specific TSD unit may be developed and included in Part III, V, and/or VI of this Permit. In developing a critical system list, or in the absence of a critical system list, WAC 173-303-830 Modifications will be considered.

The term "**Dangerous Constituent**" means any constituent identified in WAC 173-303-9905 or 40 CFR Part 264 Appendix IX , any constituent which caused a waste to be listed or designated as dangerous under Chapter 173-303 WAC, and any constituents within the meaning of hazardous substance at RCW 70.105D.020(7).

The term "**Dangerous Waste**" means those solid wastes designated under Chapter 173-303 WAC as dangerous or extremely hazardous waste. As used in the Permit, the phrase "dangerous waste" will refer to the full universe of wastes regulated by Chapter 70.105 RCW and Chapter 173-303 WAC (including dangerous waste, hazardous waste, extremely hazardous waste, mixed waste, and acutely hazardous waste).

The term "**Days**" means calendar days, unless specifically identified otherwise. Any submittal, notification, or recordkeeping requirement that would be due, under the Conditions of this Permit, on a Saturday, Sunday, or federal, or state holiday, will be due on the following business day, unless specifically stated otherwise in the Permit.

The term "**Director**" means the Director of the Washington State Department of Ecology, or a designated representative. The Program Manager of the Nuclear Waste Program (with the address as specified on page one [1] of this Permit) is a duly authorized and designated representative of the Director for purposes of this Permit.

The term "**Ecology**" means the Washington State Department of Ecology (with the address as specified on page one [1] of this Permit).

The term "**Facility**" means all contiguous land, structures, other appurtenances, and improvements on the land used for recycling, reusing, reclaiming, transferring, storing, treating, or disposing of dangerous waste. The legal and physical description of the Facility is set forth in Permit Attachment 2.

The term "**Facility**" for the purposes of corrective action under Permit Condition II.Y, means all contiguous property under the control of the Permittees and all property within the meaning of "facility" at RCW 70.105D.020(3) as set forth in Permit Attachment 2.

The term "**HFFACO**" means the Hanford Federal Facility Agreement and Consent Order, as amended (Commonly referred to as Tri-Party Agreement [TPA]).

The term "**Permittees**" means the United States Department of Energy (owner/operator), Bechtel National, Inc. (Co-operator), CH2M HILL Plateau Remediation Company (Co-operator), Mission Support Alliance, LLC (MSA), Pacific Northwest National Laboratory (Co-operator), Washington Closure Hanford, LLC (Co-operator), Washington River Protection Solutions, LLC.

The term "**Permittees**" for purposes of corrective action under Permit Condition II.Y means only the United States Department of Energy (owner/operator).

The term "**Raw Data**" means the initial value of analog or digital instrument output, and/or manually recorded values obtained from measurement tools or personal observation. These values are converted into reportable data (e.g., concentration, percent moisture) via automated procedures and/or manual calculations.

The term "**RCRA Permit**" means the Dangerous Waste Portion of the RCRA Permit for the Treatment, Storage, and Disposal of Dangerous Waste (Dangerous Waste Permit) issued by the Washington State Department of Ecology, pursuant to Chapter 70.105 RCW and Chapter 173-303 WAC, coupled with the HSWA Portion of the RCRA Permit for the Treatment, Storage, and Disposal of Hazardous Waste (HSWA Permit) issued by EPA, Region 10, pursuant to 42 U.S.C. 6901 et seq. and 40 CFR Parts 124 and 270.

The term "**Reasonable Times**" means normal business hours; hours during which production, treatment, storage, construction, disposal, or discharge occurs, or times when Ecology suspects a violation requiring immediate inspection.

The term "**Release**" means any intentional or unintentional spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of dangerous constituents into the environment and includes the abandonment or discarding of barrels, containers, and other receptacles containing dangerous waste or dangerous constituents, and includes any releases within the meaning of release at RCW 70.105D.020(20).

The term "**Significant Discrepancy**" in regard to a manifest or shipping paper, means a discrepancy between the quantity or type of dangerous waste designated on the manifest, or shipping paper, and the quantity or type of dangerous waste a TSD unit actually receives. A significant discrepancy in quantity is a variation greater than ten (10) percent in weight for bulk quantities (e.g., tanker trucks, railroad tank cars, etc.), or any variation in piece count for nonbulk quantities (i.e., any missing container or package would be a significant discrepancy). A significant discrepancy in type is an obvious physical or chemical difference which can be discovered by inspection or waste analysis (e.g., waste solvent substituted for waste acid).

The term "**Solid Waste Management Unit (SWMU)**" means any discernible location at the Facility where solid wastes have been placed at any time, irrespective of whether the location was intended for the management of solid or dangerous waste, and includes any area at the Facility at which solid wastes have been routinely and systematically released (for example through spills), and includes dangerous waste treatment, storage, and disposal units.

The term **"Unit" or "TSD unit"**, as used in Parts I through VI of this Permit, means the contiguous area of land on or in which dangerous waste is placed, or the largest area in which there is a significant likelihood of mixing dangerous waste constituents in the same area. A TSD unit, for purposes of this Permit, is a subgroup of the Facility which has been identified in a Hanford Facility Dangerous Waste Part A Form.

ACRONYMS

ALARA	As Low As Reasonably Achievable
AMSF	Alkali Metal Storage Facility
APDS	Ash Pit Demolition Site
APP	Used to Denote Appendix Page Numbers
APT	Area Process Trenches
ARAR	Applicable, Relevant, and Appropriate Requirements
BNI	Bechtel National, Inc
BPDS	Borrow Pit Demolition Site
CD/RR	Chemical Disposal/Recycle Request
CERCLA	Comprehensive Environmental Response Compensation and Liability Act of 1980 (as Amended by the Superfund Reauthorization Act of 1986)
CFR	Code of Federal Regulations
CHPRC	CH2M HILL Plateau Remediation Company
CIP	Construction Inspection Plan
CLARC	Cleanup Levels and Risk Calculations
CLP	Contract Laboratory Program
COC	Chemical Contaminants of Concern
CPP	CERCLA Past Practice
USDOE-RL	U.S. Department of Energy, Richland Operations Office
USDOE-ORP	U.S. Department of Energy, Office of River Protection
DQO	Data Quality Objective
DSC	Differential Scanning Colorimetry
EC	Emergency Coordinator
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ERA	Expedited Response Action
ETF	200 Area Effluent Treatment Facility
HFFACO	Hanford Federal Facility Agreement and Consent Order
GW	Ground Water
HPADS	Hanford Patrol Academy Demolition Site
HSWA	Hazardous and Solid Waste Amendments of 1984
HWMA	Hazardous Waste Management Act
ID	Identification
IRM	Interim Remedial Measure

1	LDR	Land Disposal Restrictions
2	LERF	Liquid Effluent Retention Facility
3	LSFF	105-DR Large Sodium Fire Facility
4	MSA	Mission Support Alliance, LLC
5	MTCA	Model Toxics Control Act
6	OSWER	Office of Solid Waste and Emergency Response
7	PNNL	Pacific Northwest National Laboratory
8	QA	Quality Assurance
9	QAPP	Quality Assurance Project Plan
10	QC	Quality Control
11	RCRA	Resource Conservation and Recovery Act of 1976
12	RCW	Revised Code of Washington
13	ROD	Record of Decision
14	RPD	Relative Percent Difference
15	RPP	RCRA Past Practice
16	SAP	Sampling and Analysis Plan
17	SARA	Superfund Amendments and Reauthorization Act of 1986
18	SCD	Security Control Devices
19	SHLWS	Simulated High Level Waste Slurry
20	SOP	Standard Operating Procedure
21	SWMU	Solid Waste Management Unit
22	TCLP	Toxicity Characteristic Leaching Procedure
23	TSD	Treatment, Storage, and/or Disposal
24	USDOE	United States Department of Energy
25	U.S.C.	United States Code
26	WAC	Washington Administrative Code
27	WAP	Waste Analysis Plan
28	WCH	Washington Closure Hanford, LLC
29	WRPS	Washington River Protection Solutions, LLC
30	WTP	Waste Treatment and Immobilization Plant
31	183-H	183-H Solar Evaporation Basins
32	242-A	242-A Evaporator
33	300 APT	300 Area Process Trenches
34	300 ASE	300 Area Solar Evaporator
35	303-K	303-K Storage Facility

1	305-B	305-B Storage Facility
2	325 HWTUs	325 Hazardous Waste Treatment Units
3	616-NRDWSF	616 Nonradioactive Dangerous Waste Storage Facility
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PART I STANDARD CONDITIONS

I.A Effect of Permit

The Permittees are authorized to treat, store, and dispose of dangerous waste in accordance with the Conditions of this Permit and in accordance with the applicable provisions of Chapter 173-303 WAC (including provisions of the Chapter as they have been applied in the HFFACO). Any treatment, storage, or disposal of dangerous waste by the Permittees at the Facility that is not authorized by this Permit, or by WAC 173-303-400 (including provisions of this regulation as they have been applied in the HFFACO), for those TSD units not subject to this Permit, and for which a Permit is required by Chapter 173-303 WAC, is prohibited.

TSD units operating or closing under interim status will maintain interim status until that TSD unit is incorporated into Part III, V, and/or VI of this Permit, or until interim status is terminated under WAC 173-303-805(8). Interim status units will be incorporated into this Permit through the Permit modification process.

The Conditions of this Permit will be applied to the Facility as defined by the Permit Applicability Matrix (Permit Attachment 9).

I.A.1

USDOE is responsible for activities which include, but are not limited to, the overall management and operation of the Facility.

BNI is identified as a Permittee for activities subject to the Conditions of this Permit where its agents, employees, or subcontractors have operational and/or management responsibilities and control.

CHPRC is identified as a Permittee for activities subject to the Conditions of this Permit where its agents, employees, or subcontractors have operational and/or management responsibilities and control.

MSA is identified as a Permittee for activities subject to the Conditions of this Permit where its agents, employees, or subcontractors have operational and/or management responsibilities and control.

PNNL is identified as a Permittee for activities subject to the Conditions of this Permit where its agents, employees, or subcontractors have operational and/or management responsibilities and control.

WCH is identified as a Permittee for activities subject to the Conditions of this Permit where its agents, employees, or subcontractors have operational and/or management responsibilities and control.

WRPS is identified as a Permittee for activities subject to the Conditions of this Permit where its agents, employees, or subcontractors have operational and/or management responsibilities and control.

I.A.2

Coordination with the HFFACO

Each TSD unit will have an application for a final status Permit or closure/post-closure plan submitted to Ecology in accordance with the schedules identified in the HFFACO Milestone M-20-00 or in accordance with WAC 173-303-830. After completion of the Permit application or closure/post-closure plan review, a final Permit decision will be made pursuant to WAC 173-303-840. Specific Conditions for each TSD unit will be incorporated into this Permit in accordance with the Class 3 Permit modification procedure identified in Permit Condition I.C.3.

I.B Personal and Property Rights

This Permit does not convey property rights of any sort, or any exclusive privilege; nor does it authorize any injury to persons or property, or any invasion of other private rights, or any violation of federal, state, or local laws or regulations.

I.C Permit Actions

I.C.1 Modification, Revocation, Reissuance, or Termination

This Permit may be modified, revoked and reissued, or terminated by Ecology for cause per WAC 173-303-810(7) as specified in WAC 173-303-830(3), (4), and (5).

I.C.2 Filing of a Request

The filing of a request for a Permit modification, or revocation and reissuance, or termination, or a notification of planned changes, or anticipated noncompliance on the part of the Permittees, will not stay any Permit condition [WAC 173-303-810(7)] except as provided in WAC 173-303-810(2) under an emergency permit.

I.C.3 Modifications

I.C.3.a Except as provided otherwise by specific language in this Permit, the Permit modification procedures of WAC 173-303-830(2), (3), and (4) will apply to modifications or changes in design or operation of the Facility, or any modification or change in dangerous waste management practices covered by this Permit.

I.C.3.b As an exception, the Permittees will provide notifications to Ecology required by WAC 173-303-830(4)(a)(i)(A) on a quarterly basis. Each quarterly notification will be submitted within ten (10) days of the end of the quarter, and provide the required information for all such modification s put into effect during that reporting period.

I.C.3.c Quarterly reporting periods will be based upon the state Fiscal Year. For notifications required by the Permittees to persons on the facility mailing list described in WAC 173-303-830(4)(a)(i)(B), -830(4)(b)(ii), -830(4)(c)(ii), and -830(4)(e)(ii)(C), use of appropriate HFFACO Community Relations Plan publications and/or list servers for public involvement satisfy the notification requirements.

I.D Severability

I.D.1 Effect of Invalidation

The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstance is contested and/or held invalid, the application of such provision to other circumstances and the remainder of this Permit will not be affected thereby. Invalidation of any state statutory or regulatory provision which forms the basis for any Condition of this Permit does not affect the validity of any other state statutory or regulatory basis for said Condition.

I.D.2 Final Resolution

In the event that a Condition of this Permit is stayed for any reason, the Permittees will continue to comply with the related applicable and relevant interim status standards in WAC 173-303-400 until final resolution of the stayed Condition, unless Ecology determines compliance with the related applicable and relevant interim status standards would be technologically incompatible with compliance with other Conditions of this Permit, which have not been stayed, or unless the HFFACO authorizes an alternative action, in which case the Permittees will comply with the HFFACO.

I.E Duties and Requirements

I.E.1 Duty to Comply

The Permittees will comply with all Conditions of this Permit, except to the extent and for the duration such noncompliance is authorized by an emergency Permit issued under WAC 173-303-804. Any Permit noncompliance other than noncompliance authorized by an emergency Permit constitutes a violation of Chapter 70.105 RCW, as amended, and is grounds for enforcement action, Permit termination, modification or revocation and reissuance of the Permit, and/or denial of a Permit renewal application.

I.E.2 Compliance Not Constituting Defense

Compliance with the terms of this Permit does not constitute a defense to any order issued or any action brought under Section 3007, 3008, 3013, or 7003 of RCRA (42 U.S.C. Sections 6927, 6928, 6934, and 6973), Section 104, 106(a) or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) [42 U.S.C. Sections 9604, 9606(a), and 9607], as amended by the Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. 9601 et seq.), or any other federal, state, or local law governing protection of public health, or the environment; provided, however, that compliance with this Permit during its term constitutes compliance at those areas subject to this Permit for the purpose of enforcement with WAC 173-303-140, WAC 173-303-180, WAC 173-303-280 through -395, WAC 173-303-600 through -680, WAC 173-303-810, and WAC 173-303-830, except for Permit modification s and those requirements not included in the Permit that become effective by statute, or that are promulgated under 40 CFR Part 268 restricting the placement of dangerous waste in or on the land.

I.E.3 Duty to Reapply

If the Permittees wish to continue an activity regulated by this Permit after the expiration date of this Permit, the Permittees must apply for, and obtain a new Permit, in accordance with WAC 173-303-806(6).

I.E.4 Permit Expiration and Continuation

This Permit, and all Conditions herein, will remain in effect beyond the Permit's expiration date until the effective date of the new Permit, if the Permittees have submitted a timely, complete application for renewal per WAC 173-303-806 and, through no fault of the Permittees, Ecology has not made a final Permit determination as set forth in WAC 173-303-840.

I.E.5 Need to Halt or Reduce Activity Not a Defense

It will not be a defense in the case of an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the Conditions of this Permit.

I.E.6 Duty to Mitigate

In the event of noncompliance with the Permit, the Permittees will take all reasonable steps to minimize releases to the environment, and will carry out such measures as are reasonable to minimize or correct adverse impacts on human health and the environment.

I.E.7 Proper Operation and Maintenance

The Permittees will at all times properly operate and maintain all facilities and systems of treatment and control, which are installed or used by the Permittees, to achieve compliance with the Conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance/quality control procedures. This provision requires the operation of backup or auxiliary facilities, or similar systems only when necessary to achieve compliance with the Conditions of the Permit.

I.E.8 Duty to Provide Information

The Permittees will furnish to Ecology, within a reasonable time, any relevant information which Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittees will also furnish to Ecology, upon request, copies of records required to be kept by this Permit.

I.E.9 Inspection and Entry

The Permittees will allow Ecology, or authorized representatives, upon the presentation of Ecology credentials, to:

I.E.9.a During operating hours, and at all other reasonable times, enter and inspect the Facility or any unit or area within the Facility, where regulated activities are located or conducted, or where records must be kept under the Conditions of this Permit;

I.E.9.b Have access to, and copy, at reasonable times, any records that must be kept under the Conditions of this Permit;

I.E.9.c Inspect at reasonable times any portion of the Facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and,

I.E.9.d Sample or monitor, at reasonable times, for the purposes of assuring Permit compliance, or as otherwise authorized by state law, as amended, for substances or parameters at any location.

I.E.10 Monitoring and Records

I.E.10.a Samples and measurements taken by the Permittees for the purpose of monitoring required by this Permit will be representative of the monitored activity. Sampling methods will be in accordance with WAC 173-303-110 or 40 CFR 261, unless otherwise specified in this Permit, or agreed to in writing by Ecology. Analytical methods will be as specified in the most recently published test procedure of the documents cited in WAC 173-303-110(3)(a) through (h), unless otherwise specified in this Permit, or agreed to in writing by Ecology.

I.E.10.b The Permittees will retain at the TSD unit(s), or other locations approved by Ecology, as specified in Parts III, V, and/or VI of this Permit, records of monitoring information required for compliance with this Permit, including calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of reports and records required by this Permit, and records of data used to complete the application for this Permit for a period of at least ten (10) years from the date of the sample, measurement, report, or application, unless otherwise required for certain

information by other Conditions of this Permit. This information may be retained on electronic media.

I.E.10.c The Permittees will retain at the Facility, or other approved location, records of all monitoring and maintenance records, copies of all reports and records required by this Permit, and records of all data used to complete the application for this Permit, which are not associated with a particular TSD unit, for a period of at least ten (10) years from the date of certification of completion of post-closure care, or corrective action for the Facility, whichever is later. This information may be retained on electronic media.

I.E.10.d The record retention period may be extended by request of Ecology at any time by notification, in writing, to the Permittees, and is automatically extended during the course of any unresolved enforcement action regarding this Facility to ten (10) years beyond the conclusion of the enforcement action.

I.E.10.e Records of monitoring information shall include:

I.E.10.e.i The date, exact place and time of sampling or measurements;

I.E.10.e.ii The individual who performed the sampling or measurements and their affiliation;

I.E.10.e.iii The dates the analyses were performed;

I.E.10.e.iv The individual(s) who performed the analyses and their affiliation;

I.E.10.e.v The analytical techniques or methods used; and,

I.E.10.e.vi The results of such analyses

I.E.11 Reporting Planned Changes

The Permittees will give notice to Ecology, as soon as possible, of any planned physical alterations, or additions to the Facility subject to this Permit. Such notice does not authorize any noncompliance with, or modification of, this Permit.

I.E.12 Certification of Construction or Modification

I.E.12.a The Permittees may not commence treatment, storage, or disposal of dangerous wastes in a new or modified portion of TSD units subject to this Permit until:

I.E.12.b The Permittees have submitted to Ecology, by certified mail, overnight express mail, or hand delivery, a letter signed by the Permittees, and a registered professional engineer, stating that the TSD unit has been constructed or modified in compliance with the Conditions of this Permit; and,

I.E.12.c Ecology has inspected the modified or newly constructed TSD unit, and finds that it is in compliance with the Conditions of this Permit; or

I.E.12.d Within fifteen (15) days of the date of receipt of the Permittees' letter, the Permittees have not received notice from Ecology of its intent to inspect, prior inspection is waived, and the Permittees may commence treatment, storage, and disposal of dangerous waste.

I.E.13 Anticipated Noncompliance

The Permittees will give at least thirty (30) days advance notice to Ecology of any planned changes in the Facility subject to this Permit, or planned activity which might result in noncompliance with Permit requirements.

If thirty (30) days advance notice is not possible, then the Permittees will give notice immediately after the Permittees become aware of the anticipated noncompliance. Such notice does not authorize any noncompliance with, or modification of, this Permit.

I.E.14 Transfer of Permits

I.E.14.a This Permit may be transferred to a new owner/operator only if it is modified, or revoked and reissued, pursuant to WAC 173-303-830(3)(b). Unit-specific portion may be transferred to a new Co-operator as a Class [1]1 modification with prior approval of the Department's director.

I.E.14.b Before transferring ownership or operation of the Facility during its operating life, the owner/operator will notify the new owner/operator in writing, of the requirements of WAC 173-303-290(2), -600 and -806, and this Permit.

I.E.15 Immediate Reporting

I.E.15.a The Permittees will verbally report to Ecology any release of dangerous waste or hazardous substances, or any noncompliance with the Permit which may endanger human health or the environment. Any such information will be reported immediately after the Permittees become aware of the circumstances.

I.E.15.b The immediate verbal report will contain all the information needed to determine the nature and extent of any threat to human health and the environment, including the following:

I.E.15.b.i Name, address, and telephone number of the Permittee responsible for the release or noncompliant activity;

I.E.15.b.ii Name, location, and telephone number of the unit at which the release occurred;

I.E.15.b.iii Date, time, and type of incident;

I.E.15.b.iv Name and quantity of material(s) involved;

I.E.15.b.v The extent of injuries, if any;

I.E.15.b.vi An assessment of actual or potential hazard to the environment and human health, where this is applicable;

I.E.15.b.vii Estimated quantity of released material that resulted from the incident; and,

I.E.15.b.viii Actions which have been undertaken to mitigate the occurrence.

I.E.15.c The Permittees will report, in accordance with Permit Conditions I.E.15.a and I.E.15.b, any information concerning the release, or unpermitted discharge, of any dangerous waste or hazardous substances that may cause an endangerment to drinking water supplies, or ground or surface waters, or of a release, or discharge of dangerous waste, or hazardous substances, or of a fire or explosion at the Facility, which may threaten human health or the environment. The description of the occurrence and its cause will include all information necessary to fully evaluate the situation and to develop an appropriate course of action.

I.E.15.d For any release or noncompliance not required to be reported to Ecology immediately, a brief account must be entered within two (2) working days, into the TSD Operating Record, for a TSD unit, or into the Facility Operating Record, inspection log, or separate spill log, for non-TSD units. This account must include: the time and date of the release, the location and cause of the release, the type and quantity of material released, and a brief description of any response actions taken or planned.

I.E.15.e All releases, regardless of location of release, or quantity of release, will be controlled and mitigated, if necessary, as required by WAC 173-303-145(3).

I.E.16 Written Reporting

Within fifteen (15) days after the time the Permittees become aware of the circumstances of any noncompliance with this Permit, which may endanger human health or the environment, the Permittees will provide to Ecology a written report. The written report will contain a description of the noncompliance and its cause (including the information provided in the verbal notification); the period of noncompliance including exact dates and times; the anticipated time noncompliance is expected to continue, if the noncompliance has not been corrected; corrective measures being undertaken to mitigate the situation, and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

I.E.17 Manifest Discrepancy Report

I.E.17.a For dangerous waste received from outside the Facility, whenever a significant discrepancy in a manifest is discovered, the Permittees will attempt to reconcile the discrepancy. If not reconciled within fifteen (15) days of discovery, the Permittees will submit a letter report in accordance with WAC 173-303-370(4), including a copy of the applicable manifest or shipping paper, to Ecology.

I.E.17.b For dangerous waste which is being transported within the Facility (i.e., shipment of on-site generated dangerous waste), whenever a significant discrepancy in the shipping papers (see Permit Condition II.Q.1) is discovered, the Permittees will attempt to reconcile the discrepancy. If not reconciled within fifteen (15) days of discovery, the Permittees will note the discrepancy in the receiving unit's Operating Record.

I.E.18 Unmanifested Waste Report

The Permittees will follow the provisions of WAC 173-303-370 for the receipt of any dangerous waste shipment from off-site. The Permittees will also submit a report in accordance with WAC 173-303-390(1) to Ecology within fifteen (15) days of receipt of any unmanifested dangerous waste shipment received from off-site sources.

I.E.19 Other Noncompliance

The Permittees will report to Ecology all instances of noncompliance, not otherwise required to be reported elsewhere in this Permit, at the time the Annual Dangerous Waste Report is submitted.

I.E.20 Other Information

Whenever the Permittees become aware that they have failed to submit any relevant facts in a Permit application, closure plan, or post-closure plan, or submitted incorrect information in a Permit application, closure plan, or post-closure plan, or in any report to Ecology, the Permittees will promptly submit such facts or corrected information.

I.E.21 Reports, Notifications, and Submissions

All written reports, notifications or other submissions, which are required by this Permit to be sent, or given to the Director or Ecology, should be sent certified mail, overnight express mail, or hand delivered, to the current address and telephone number shown below. This address and telephone number may be subject to change.

Washington State Department of Ecology
Nuclear Waste Program
3100 Port of Benton Blvd
Richland, Washington 99354
Telephone: (509) 372-7950

Telephonic and oral reports/notifications also need to be provided to Ecology's Richland Office.

Ecology will give the Permittees written notice of a change in address or telephone number. It is the responsibility of the Permittees to ensure any required reports, notifications, or other submissions are transmitted to the addressee listed in this Condition. However, the Permittees will not be responsible for ensuring verbal and written correspondence reaches a new address or telephone number until after their receipt of Ecology's written notification.

I.E.22 Annual Report

The Permittees will comply with the annual reporting requirements of WAC 173-303-390(2)(a) through (e), and (g).

I.F Signatory Requirement

All applications, reports, or information submitted to Ecology, which require certification, will be signed and certified in accordance with WAC 173-303-810(12) and (13). All other reports required by this Permit and other information requested by Ecology will be signed in accordance with WAC 173-303-810(12).

I.G Confidential Information

The Permittees may declare as confidential any information required to be submitted by this Permit, at the time of submission, in accordance with WAC 173-303-810(15).

I.H Documents to be Maintained at Facility Site

The Permittees will maintain at the Facility, or some other location approved by Ecology, the following documents and amendments, revisions, and modifications to these documents: (1) This Permit and all Attachments; and (2) The Hanford Facility Operating Record.

All dangerous waste Part B permit applications, post closure permit applications, and closure plan applications are maintained in the Administrative Record located at 2440 Stevens, Room 1101, Richland, WA.

Other approved locations: (1) 700 Area, (2) Locations within the City of Richland under control of one or more of the Permittees, (3) Administrative Record locations within the Stevens Center complex, (4) Consolidated Information Center at Washington State University, Tri-Cities. (5) Archived records at the National Archives and Records Administration (NARA), Pacific Alaska Region, 6125 Sand Point Way NE, Seattle, Washington, 98115-7999.

These documents will be maintained for ten (10) years after post-closure care or corrective action for the Facility, whichever is later, has been completed and certified as complete.

PART II GENERAL FACILITY CONDITIONS

II.A Facility Contingency Plan

II.A.1 The Permittees will immediately carry out applicable provisions of the *Hanford Emergency Management Plan* as provided in Permit Attachment 4, pursuant to WAC 173-303-360(2), whenever there is an incident meeting the criteria of Permit Attachment 4, Section 4.2. Enforceable portions of Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) are identified in Permit Attachment 4, Appendix A.

II.A.2 The Permittees will comply with the requirements of WAC 173-303-350(4), as provided in the *Hanford Emergency Management Plan* (Permit Attachment 4). The *Hanford Emergency Management Plan* provides reference to the need for unit-specific contingency documentation. Unit-specific contingency documentation for Part III TSD units is included in Part III of this Permit. Unit-specific contingency documentation for Part V and VI TSD units required by this Permit condition is maintained in the Hanford Facility Operating Record, Unit-Specific files.

II.A.3 The *Permittees* will review and amend, if necessary, the applicable portions of the *Hanford Emergency Management Plan*, as provided in Permit Attachment 4, pursuant to WAC 173-303-350(5), and in accordance with the provisions of WAC 173-303-830(4). The Permittees will be able to demonstrate how Amendments to the applicable portions are controlled. The plan will be amended within a period of time agreed upon by Ecology.

II.A.4 The Permittees will comply with the requirements of WAC 173-303-350(3) and –360(1) concerning the emergency coordinator, except the names and home telephone numbers will be on file with the single point-of-contact, phone number (509) 373-3800 or 375-2400 (for PNNL units) as described in the *Hanford Emergency Management Plan.*

II.B Preparedness and Prevention

II.B.1 The Permittees will equip the Facility with the equipment specified in WAC 173-303-340(1) as specified in the *Hanford Emergency Management Plan* (Permit Attachment 4). Unit-specific preparedness and prevention provisions are included in Parts III, V, and/or VI of this Permit.

II.B.2 The Permittees will test and maintain the equipment specified in Permit Condition II.B.1 as necessary to assure proper operation in the event of emergency.

II.B.3 The Permittees will maintain access to communications or alarms pursuant to WAC 173-303-340(2), as provided in the *Hanford Emergency Management Plan* (Permit Attachment 4) and unit-specific contingency plans.

II.B.4 The Permittees will comply with WAC 173-303-340(4) and WAC 173-303-355(1) pertaining to arrangements with local authorities.

II.B.5 Based on the arrangements with local authorities required by WAC 173-303-340(4) documented in Permit Attachment 4, Table 3-1, the Permittees will maintain the Memorandums of Understanding to comply with WAC 173-303-350(4)(b). The Hanford Facility Memorandums of Understanding with local authorities provides emergency planning and coordination equivalent to submittal of the contingency plan to local authorities

II.C Personnel Training

II.C.1 The Permittees will conduct personnel training as required by WAC 173-303-330. The Permittees will maintain documents in accordance with WAC 173-303-330(2) and (3). Training records may be maintained in the Hanford Facility Operating Record, or on electronic data storage.

II.C.2 All Hanford Facility personnel will receive general Facility training within six (6) months of hire. This training will provide personnel with orientation of dangerous waste management activities being conducted at the Hanford Facility. This training will include:

II.C.2.a Description of emergency signals and appropriate personnel response;

II.C.2.b Identification of contacts for information regarding dangerous waste management activities;

II.C.2.c Introduction to waste minimization concepts;

II.C.2.d Identification of contact(s) for emergencies involving dangerous waste; and

II.C.2.e Familiarization with the applicable portions of the *Hanford Emergency Management Plan.*

II.C.3 Description of training plans for personnel assigned to TSD units subject to this Permit are delineated in the unit-specific Chapters in Parts III, V, and/or VI of this Permit.

II.C.4 The Permittees will provide the necessary training to non-Facility personnel (i.e., visitors, sub-contractors), as appropriate, for the locations of such personnel, and the activities that will be undertaken. At a minimum, this training will describe dangerous waste management hazards at the Facility.

II.D Waste Analysis

II.D.1 All waste analyses required by this Permit will be conducted in accordance with a written waste analysis plan (WAP), or sampling and analysis plan (SAP). Operating TSD units will have a WAP, which will be approved through incorporation of the TSD unit into Part III of this Permit. Closing TSD units, and units in post-closure, should have a SAP and, if necessary, a WAP, which will be approved through incorporation of the TSD unit into Part V and/or VI of this Permit.

II.D.2 Until a WAP is implemented in accordance with Permit Condition II.D.1., any unit(s) identified in Parts III, V, and/or VI of this Permit, without a unit-specific WAP approved by Ecology, will not treat, store, or dispose of dangerous waste, unless specified otherwise by Ecology in writing.

II.D.3 Each TSD unit WAP will include:

II.D.3.a The parameters for which each dangerous waste will be analyzed, and the rationale for selecting these parameters; (i.e., how analysis for these parameters will provide sufficient information on the waste properties to comply with WAC 173-303-300(1), (2), (3), and (4);

II.D.3.b The methods of obtaining or testing for these parameters;

II.D.3.c The methods for obtaining representative samples of wastes for analysis (representative sampling methods are discussed in WAC 173-303-110(2);

II.D.3.d The frequency with which analysis of a waste will be reviewed, or repeated, to ensure that the analysis is accurate and current;

II.D.3.e The waste analyses which generators have agreed to supply;

II.D.3.f Where applicable, the methods for meeting the additional waste analysis requirements for specific waste management methods, as specified in WAC 173-303-140(4)(b), 173-303-395(1), 173-303-630 through 173-303-670, and 40 CFR 264.1034, 264.1063, 284(a), and 268.7, for final status facilities;

II.D.3.f.i For off-site facilities, the procedures for confirming that each dangerous waste received matches the identity of the waste specified on the accompanying manifest, or shipping paper. This includes at least:

II.D.3.f.i.a The procedure for identifying each waste movement at the Facility; and,

II.D.3.f.i.b The method for obtaining a representative sample of the waste to be identified, if the identification method includes sampling.

II.D.3.f.ii For surface impoundments exempted from Land Disposal Restrictions (LDR) under 40 CFR 268.4(a), incorporated by reference in WAC 173-303-140(2), the procedures and schedules for:

II.D.3.f.iii The sampling of impoundment contents;

II.D.3.f.iv The analysis of test data; and

II.D.3.f.v The annual removal of residues that are not delisted under 40 CFR 260.22, or which exhibit a characteristic of hazardous waste and either;

II.D.3.f.v.a Do not meet applicable treatment standards of 40 CFR Part 268, Subpart D; or

II.D.3.f.v.b Where no treatment standards have been established:

II.D.3.f.v.b.1 Such residues are prohibited from land disposal under 40 CFR 268.32, or RCRA Section 3004(d); or

II.D.3.f.v.b.2 Such residues are prohibited from land disposal under 40 CFR 268.33(f); and

II.D.4 Should waste analysis be required by this Permit at a location on the Facility, other than at a TSD unit, a SAP will be maintained by the Permittees, and made available upon request from Ecology. Any SAP required by this Permit, not associated with a particular TSD unit, will include the elements of Permit Conditions II.D.3.a.

II.E Quality Assurance/Quality Control

II.E.1 All WAPs and SAPs required by this Permit will include a quality assurance/quality control (QA/QC) plan, or equivalent, to document all monitoring procedures to ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented in accordance with HFFACO Action Plan §6.5, Quality Assurance, and reported/made available in accordance with HFFACO Action Plan §9.6, Data Access and Delivery Requirements.

II.E.2 The level of QA/QC for the collection, preservation, transportation, and analysis of each sample required for implementation of this Permit may be based upon an Ecology-approved DQO for the sample. These DQOs will be approved by Ecology in writing or through incorporation of unit plans and Permits into Parts III, V, and/or VI of this Permit.

II.F Ground Water and Vadose Zone Monitoring

The Permittees will comply with the ground water monitoring requirements of WAC 173-303-645. This Condition will apply only to those wells the Permittees use for the ground water monitoring programs applicable to the TSD units incorporated into Parts III, V, and/or VI of this Permit. Where releases from TSD units subject to this Permit have been documented or confirmed by investigation, or where vadose zone monitoring is proposed for integration with ground water monitoring, the Permittees will evaluate the applicability of vadose zone monitoring. The Permittees will consult with Ecology regarding the implementation of these requirements. If agreed to by Ecology, integration of ground water and vadose zone monitoring, for reasons other than this Permit, may be accommodated by this Permit. Results from other investigation activities will be used whenever possible to supplement and/or replace sampling required by this Permit.

II.F.1 Purgewater Management

Purgewater will be handled in accordance with the requirements set forth in permit Attachment 10, *Purgewater Management Plan.*

II.F.2 Well Inspection and Maintenance

II.F.2.a The Permittees will inspect the integrity of active resource protection wells as defined by WAC 173-160-030, subject to this Permit, at least once every five (5) years as specified in the *Hanford Well Maintenance Inspection Plan* (Permit Attachment 8). These inspections will be recorded in the Operating Record.

II.F.2.b The Permittees will evaluate resource protection wells subject to this Permit according to the *Hanford Well Maintenance Inspection Plan* (Permit Attachment 8) and the *Policy on Remediation of Existing Wells and Acceptance Criteria for RCRA and CERCLA*, June 1990 (Permit Attachment 7). The Permittees will submit a permit modification request to Ecology to decommission or maintain wells as necessary to ensure compliance with WAC 173-303-645(8)(c). This permit modification request will include a schedule of compliance, which may incorporate by reference applicable schedule(s) in HFFACO Milestone M-24. For Wells to be decommissioned, this permit modification must also include a request for installation of replacement wells, if necessary, to ensure compliance with WAC 173-303-645 requirements.

II.F.2.c Ecology will receive a notice of intent (NOI) in writing at least seventy-two (72) hours before the Permittees decommission (excluding maintenance activities) any well subject to this Permit.

II.F.2.d For wells subject to this Permit, the Permittees will achieve full compliance with Chapter 173-160 WAC and Chapter 18.104 RCW by replacing non-compliant wells subject to the permit with new wells under the schedule in HFFACO Milestone M-24, as amended, incorporated by reference into this Permit.

II.F.3 Well Construction

All wells constructed pursuant to this Permit will be constructed in compliance with Chapter 173-160 WAC.

II.G Siting Criteria

The Permittees will comply with the applicable notice of intent and siting criteria of WAC 173-303-281 and WAC 173-303-282, respectively.

II.H Recordkeeping and Reporting

The provisions of WAC 173-303-620 are not applicable to the Hanford Facility because the USDOE is both owner and operator of the Hanford Facility. WAC 173-303-620(1)(c).

II.I Facility Operating Record

II.I.1 The Permittees will maintain a written Facility Operating Record until ten (10) years after post-closure, or corrective action is complete and certified for the Facility, whichever is later. Except as specifically provided otherwise in this Permit, the Permittees will also record all information referenced in this Permit in the Facility Operating Record within seven (7) working days after the information becomes available. A TSD unit-specific Operating Record will be maintained for each TSD unit at a location identified in Parts III, V, and VI of this Permit. This information may be maintained on electronic media. Each TSD unit-specific Operating Record will be included by reference in the Facility Operating Record. Information required in each TSD unit-specific Operating Record is identified on a unit-by-unit basis in Part III, V, or VI of this Permit. The Facility Operating Record will include, but not be limited to, the following information.

II.I.1.a A description of the system(s) currently utilized to identify and map solid waste management units and their locations. The description of the system(s) is required to include an identification of on-site access to the system's data, and an on-site contact name and telephone number. In addition to, or as part of, this system(s), the Permittees will also maintain a list identifying active ninety (90)-day waste storage areas, and dangerous waste satellite accumulation areas and their locations. The list will identify the location, the predominant waste types managed at the area, and a date identifying when the list was compiled. Maps will be provided by the Permittees upon request by Ecology;

II.I.1.b Records and results of waste analyses required by WAC 173-303-300;

II.I.1.c An identification of the system(s) currently utilized to generate Occurrence Reports. The identification of the system(s) is required to include a description, an identification of an on-site location of hard-copy Occurrence Reports, an identification of on-site access to the system's data, and an on-site contact name and telephone number;

II.I.1.d Copies of all unmanifested waste reports;

II.I.1.e The *Hanford Emergency Management Plan*, as well as summary reports, and details of all incidents that require implementing the contingency plan, as specified in WAC 173-303-360(2)(k);

II.I.1.f An identification of the system(s) currently utilized and being developed to record personnel training records and to develop training plans. The identification of the system(s) is required to include a description, an identification of on-site access to the system's data, and an on-site contact name and telephone number;

II.I.1.g Preparedness and prevention arrangements made pursuant to WAC 173-303-340(4) and documentation of refusal by state or local authorities that have declined to enter into agreements in accordance with WAC 173-303-340(5);

II.I.1.h Reserved Condition;

II.I.1.i Reserved Condition;

II.I.1.j Documentation (e.g., waste profile sheets) of all dangerous waste transported to or from any TSD unit subject to this Permit. This documentation will be maintained in the receiving unit's Operating Record from the time the waste is received;

II.I.1.k An identification of the system(s) currently utilized to cross-reference waste locations to specific manifest document numbers. The identification of the system(s) is required to include a thorough description, an identification of an on-site location of a hard-copy data report, an identification of on-site access to the system's data, and an on-site contact name and telephone number;

II.I.1.l Reserved Condition;

II.I.1.m Annual Reports required by this Permit;

II.I.1.n An identification of all systems currently utilized to record monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation. The identification of systems will include a description of the systems. The descriptions will include a confirmation that the criteria of Permit Condition I.E.10 is provided by the utilization of the system. The identification of the systems will also include an identification of on-site access to the system's data, an on-site contact name and telephone number;

II.I.1.o Reserved Condition;

II.I.1.p Summaries of all records of ground water corrective action required by WAC 173-303-645;

II.I.1.q An identification of the system(s) currently being utilized and being developed to evaluate compliance with the Conditions of this Permit and with Chapter 173-303 WAC. The identification of the system(s) will include a description of the system(s), an identification of on-site access to the system's data, and an on-site contact name and telephone number. The description of the system(s) will also include a definition of which portion(s) of the system(s) is accessible to Ecology;

II.I.1.r All deed notifications required by this Permit (to be included by reference);

II.I.1.s All inspection reports required by this Permit; and

II.I.1.t All other reports as required by this Permit, including design change documentation and nonconformance documentation.

II.J Facility Closure

II.J.1 Final closure of the Hanford Facility will be achieved when closure activities for all TSD units have been completed, as specified in Parts III, IV, V, or VI of this Permit. Completion of these activities will be documented using either certifications of closure, in accordance with WAC 173-303-610(6), or certifications of completion of post-closure care, in accordance with WAC 173-303-610(11).

II.J.2 The Permittees will close all TSD units as specified in Parts III, V, and/or VI of this Permit.

II.J.3 The Permittees will submit a written notification of, or request for, a Permit modification in accordance with the provisions of WAC 173-303-610(3)(b), whenever there is a change in operating plans, facility design, or the approved closure plan. The written notification or request must include a copy of the amended closure plan for review, or approval, by Ecology.

II.J.4 The Permittees will close the Facility in a manner that:

II.J.4.a Minimizes the need for further maintenance;

II.J.4.b Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of dangerous waste, dangerous constituents, leachate, contaminated run-off, or dangerous waste decomposition products, to the ground, surface water, ground water, or the atmosphere; and

II.J.4.c Returns the land to the appearance and use of surrounding land areas to the degree possible, given the nature of the previous dangerous waste activity.

II.J.4.d Meets the requirements of WAC 173-303-610(2)(b).

II.K **Soil/Ground Water Closure Performance Standards**

II.K.1 For purposes of Permit Condition II.K, the term "clean closure" shall mean the status of a TSD unit at the Facility which has been closed to the cleanup levels prescribed by WAC 173-303-610(2)(b), provided certification of such closure has been accepted by Ecology.

II.K.2 The Permittees may close a TSD unit to background levels as defined in Ecology approved Hanford Site Background Documents, if background concentrations exceed the levels prescribed by Permit Condition II.K.1. Closure to these levels, provided the Permittees comply with all other closure requirements for a TSD unit as identified in Parts III, V, and/or VI of this Permit, shall be deemed as "clean closure".

II.K.3 Except for those TSD units identified in Permit Conditions II.K.1, II.K.2, or II.K.4, the Permittees may close a TSD unit to a cleanup level specified under Method C of Chapter 173-340 WAC. Closure of a TSD unit to these levels, provided the Permittees comply with all other closure requirements for the TSD unit as specified in Parts III, V, and/or VI of the Permit, and provided the Permittees comply with Permit Conditions II.K.3.a through II.K.3.c, shall be deemed as a "modified closure".

II.K.3.a For "modified closures", the Permittees shall provide institutional controls in accordance with WAC 173-340-440 which restricts access to the TSD unit for a minimum of five (5) years following completion of closure. The specific details and duration of institutional controls shall be specified in Parts III, V, and/or VI of this Permit for a particular TSD unit.

II.K.3.b For "modified closures", the Permittees shall provide periodic assessments of the TSD unit to determine the effectiveness of the closure. The specific details of the periodic assessments shall be specified in Parts III, V, and/or VI of this Permit. The periodic assessments shall include, as a minimum, a compliance monitoring plan in accordance with WAC 173-340-410 that will address the assessment requirements on a unit-by-unit basis. At least one (1) assessment activity shall take place after a period of five (5) years from the completion of closure, which will demonstrate whether the soils and ground water have been maintained at or below the allowed concentrations as specified in Parts III, V, or VI of this Permit. Should the required assessment activities identify contamination above the allowable limits as specified in Parts III, V, and/or VI, the TSD unit must be further remediated, or the requirements of II.K.4 must be followed. Should the required assessment activities demonstrate that contamination has diminished, or remained the same, the Permittees may request that Ecology reduce, or eliminate the assessment activities and/or institutional controls.

II.K.3.c For "modified closures", the Permittees shall specify the particular activities required by this Condition in a Post-Closure Permit application.

II.K.4 Any TSD unit for which Permit Conditions II.K.1, II.K.2, or II.K.3, are not chosen as the closure option, closing the TSD unit as a landfill may be selected. Closure and post-closure of the TSD unit as a landfill, must follow the procedures and requirements specified in WAC 173-303-610.

II.K.5 The cleanup option selected shall be specified in Parts III, V, and/or VI of this Permit, and shall be chosen with consideration of the potential future site use for that TSD unit/area. Definitions contained within Chapter 173-340 WAC shall apply to Permit Condition II.K. Where definitions are not otherwise provided by this Permit, the HFFACO, or Chapter 173-303 WAC.

II.K.6 Deviations from a TSD unit closure plan required by unforeseen circumstances encountered during closure activities, which do not impact the overall closure strategy, but provide equivalent results, shall be documented in the TSD unit-specific Operating Record and made available to Ecology upon request, or during the course of an inspection.

II.K.7 Where agreed to by Ecology, integration of other statutorily or regulatory mandated cleanups may be accommodated by this Permit. Results from other cleanup investigation activities shall be used whenever possible to supplement and/or replace TSD unit closure investigation activities. All, or appropriate parts of, multipurpose cleanup and closure documents can be incorporated into this Permit through the Permit modification process. Cleanup and closures conducted under any statutory authority, with oversight by either Ecology or the EPA, which meet the equivalent of the technical requirements of Permit Conditions II.K.1 through II.K.4, may be considered as satisfying the requirements of this Permit.

II.L Design and Operation of the Facility

II.L.1 Proper Design and Construction

The Permittees will design, construct, maintain, and operate the Facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous substances to air, soil, ground water, or surface water, which could threaten human health, or the environment.

II.L.2 Design Changes, Nonconformance, and As-Built Drawings

II.L.2.a After completing the Permit modification process in Permit Condition I.C.3, the Permittees will conduct all construction subject to this Permit in accordance with the approved designs, plans and specifications that are required by this Permit, unless authorized otherwise in Permit Conditions II.L.2.b or II.L.2.c. For purposes of Permit Conditions II.L.2.b and II.L.2.c, an Ecology construction inspector, or TSD unit manager, are designated representatives of Ecology.

II.L.2.b During construction of a project subject to this Permit, changes to the approved designs, plans and specifications will be formally documented. All design change documentation will be maintained in the TSD unit-specific Operating Record and will be made available to Ecology upon request or during the course of an inspection. The Permittees will provide copies of design change documentation affecting any critical system to Ecology within five (5) working days of initiating the design change documentation. Identification of critical systems will be included by the Permittees in each TSD unit-specific dangerous waste Permit application, closure plan or Permit modification, as appropriate.

Ecology will review a design change documentation modifying a critical system, and inform the Permittees in writing within two (2) working days, whether the proposed design change documentation, when issued, will require a Class 1, 2, or 3 Permit modification. If after two (2) working days Ecology has not responded, it will be deemed as acceptance of the design change documentation by Ecology.

II.L.2.c During construction of a project subject to this Permit, any work completed which does not meet or exceed the standards of the approved design, plans and specifications will be formally documented with nonconformance documentation. All nonconformance documentation will be maintained in the TSD unit-specific Operating Record and will be made available to Ecology upon request, or during the course of an inspection. The Permittees will provide copies of nonconformance documentation affecting any critical system to Ecology within five (5) working days after identification of the nonconformance. Ecology will review nonconformance documentation affecting a critical system and inform the Permittees in writing, within two (2) working days, whether a Permit modification is required for any nonconformance, and whether prior approval is required from Ecology before work proceeds, which affects the nonconforming item. If Ecology does not respond within two (2) working days, it will be deemed as acceptance and no Permit modification will be required.

II.L.2.d Upon completion of a construction project subject to this Permit, the Permittees will produce as-built drawings of the project which incorporate the design and construction modifications resulting from all project design change documentation and nonconformance documentation, as well as modifications made pursuant to WAC 173-303-830. The Permittees will place the drawings into the Operating Record within twelve (12) months of completing construction, or within an alternate period of time specified in a unit-specific Permit Condition in Part III or V of this Permit.

II.L.2.e Facility Compliance

The Permittees in receiving, storing, transferring, handling, treating, processing, and disposing of dangerous waste, will design, operate, and/or maintain the Facility in compliance with all applicable federal, state, and local laws and regulations.

II.M Security

The Permittees will comply with the security provisions of WAC 173-303-310. The Permittees may comply with the requirements of WAC 173-303-310(2) on a unit-by-unit basis.

II.N Receipt of Dangerous Wastes Generated Off-Site

II.N.1 Receipt of Off-Site Waste

The Permittees will comply with Permit Conditions II.N.2 and II.N.3 for any dangerous wastes which are received from sources outside the United States, or from off-site generators.

II.N.2 Waste from Sources Outside the United States

The Permittees will meet the requirements of WAC 173-303-290(1) for waste received from outside the United States.

II.N.3 Notice to Generator

For waste received from off-site sources (except where the owner/operator is also the generator), the Permittees will inform the generator in writing that they have the appropriate Permits for, and will accept, the waste the generator is shipping, as required by WAC 173-303-290(3). The Permittees will keep a copy of this written notice as part of the TSD unit-specific Operating Record.

II.O General Inspection Requirements

II.O.1 The Permittees will inspect the Facility to prevent malfunctions and deterioration, operator errors, and discharges, which may cause or lead to the release of dangerous waste constituents to the environment, or threaten human health. Inspections must be conducted in accordance with the provisions of WAC 173-303-320(2). In addition to the TSD unit inspections specified in Parts III, V, and/or VI, the following inspections will also be conducted:

II.O.1.a The 100, 200 East, 200 West, 300, and 400 areas will be inspected annually.

II.O.1.b The Permittees will inspect the banks of the Columbia River, contained within the Facility boundary, once a year. The inspection will be performed from the river, by boat, and the inspectors will follow the criteria in Permit Condition II.O.1.c.

II.O.1.c The Permittees will visually inspect the areas identified in Permit Conditions II.O.1.a and II.O.1.b for malfunctions, deterioration, operator errors, and discharges which may cause or lead to the release of dangerous waste constituents to the environment, or that threaten human health. Specific items to be noted are as follows:

II.O.1.c.i Remains of waste containers, labels, or other waste management equipment;

II.O.1.c.ii Solid waste disposal sites not previously identified for remedial action;

II.O.1.c.iii Uncontrolled waste containers (e.g., orphan drums);

II.O.1.c.iv Temporary or permanent activities that could generate an uncontrolled waste form; and

II.O.1.c.v Unpermitted waste discharges.

II.O.1.d The Permittees will notify Ecology at least seven (7) days prior to conducting these inspections in order to allow representatives of Ecology to be present during the inspections.

II.O.2 If the inspection by the Permittees, conducted pursuant to Permit Condition II.O.1, reveals any problems, the Permittees will take remedial action on a schedule agreed to by Ecology.

II.O.3 The inspection of high radiation areas will be addressed on a case-by-case basis in either Part III of this Permit, or prior to the inspections required in Permit Condition II.O.1.

II.P Manifest System

II.P.1 The Permittees will comply with the manifest requirements of WAC 173-303-370 for waste received from off-site and WAC 173-303-180 for waste shipped off-site.

II.P.2 Transportation of dangerous wastes along roadways, if such routes are not closed to general public access at the time of transport, can be manifested pursuant to an alternate tracking system as allowed by WAC 173-303-180(5). The alternate tracking system can be a paper system or an electronic system. The roadways addressed by this condition are a public or private right-of-way within or along the border of contiguous property where the movement is under control of the USDOE.

The alternate tracking system will consist of documentation between the offering Hanford Facility location and the receiving Hanford Facility location containing the following information:

II.P.2.a Hanford Facility offeror name, location, and telephone number;

II.P.2.b Hanford Facility receiver name, location, and telephone number;

II.P.2.c Description of waste;

II.P.2.d Number and type of containers;

II.P.2.e Total quantity of waste;

II.P.2.f Unit volume/weight;

II.P.2.g Dangerous waste number(s) or U.S. Department of Transportation hazard class; and

II.P.2.h Special handling instructions including emergency contacts.

II.P.3 The Hanford Facility offeror and receiver will resolve any discrepancies of information found related to Permit Conditions II.P.2.a through II.P.2.h.

II.P.4 If the discrepancies cannot be resolved at the Hanford Facility receiving location, a new Hanford Facility receiver location will be agreed upon, or the dangerous waste will be returned to the offeror location. The documentation accompanying the movement of dangerous waste will be updated to reflect the new receiving location.

II.Q On-Site Transportation

II.Q.1 Documentation must accompany any on-site dangerous waste which is transported to or from any TSD unit subject to this Permit, through or within the 600 Area, unless the roadway is closed to general public access at the time of shipment. Waste transported by rail or by pipeline is exempt from this Condition. This documentation will include the following information, unless other unit-specified provisions are designated in Part III or V of this Permit:

II.Q.1.a Generator's name, location, and telephone number;

II.Q.1.b Receiving TSD unit's name, location, and telephone number;

II.Q.1.c Description of waste;

II.Q.1.d Number and type of containers;

II.Q.1.e Total quantity of waste;

II.Q.1.f Unit volume/weight;

II.Q.1.g Dangerous waste number(s); and

II.Q.1.h Any special handling instructions.

II.Q.2 All non-containerized solid, dangerous waste transported to or from TSD units, subject to this Permit, will be covered to minimize the potential for material to escape during transport.

II.R Equivalent Materials

II.R.1 The Permittees may substitute an equivalent or superior product for any equipment or materials specified in this Permit. Use of equivalent or superior products will not be considered a modification of this Permit. A substitution will not be considered equivalent unless it is at least as effective as the original equipment or materials in protecting human health and the environment.

II.R.2 The Permittees will place in the Operating Record (within seven [7] days after the change is put into effect) the substitution documentation, accompanied by a narrative explanation, and the date the substitution became effective. Ecology may judge the soundness of the substitution.

II.R.3 If Ecology determines that a substitution was not equivalent to the original, it will notify the Permittees that the Permittees' claim of equivalency has been denied, of the reasons for the denial, and that the original material or equipment must be used. If the product substitution is denied, the Permittees will comply with the original approved product specification, or find an acceptable substitution.

II.S Land Disposal Restrictions (LDR)

Unless specifically identified otherwise in the HFFACO, the Permittees will comply with all LDR requirements as set forth in WAC 173-303-140.

II.T Access and Information

To the extent that work required by this Permit must be done on property not owned or controlled by the Permittees, the Permittees must utilize their best efforts to obtain access and information at these locations.

II.U Mapping of Underground Piping

II.U.1 Reserved.

II.U.2 Reserved.

II.U.3 The Permittees will maintain piping maps for existing, newly identified, and/or new dangerous waste underground pipelines (including active, inactive, and abandoned pipelines, which contain or contained dangerous waste subject to the provisions of Chapter 173-303 WAC) at the Hanford Facility. The maps will identify the origin, destination, direction of flow, size, depth and type (i.e., reinforced concrete, stainless steel, cast iron, etc.), of each pipe, and the location of their diversion boxes, valve pits, seal pots, catch tanks, receiver tanks, and pumps, and utilize Washington State Plane Coordinates, NAD 83(91), meters. If the type of pipe material is not documented on existing drawings, the most probable material type will be provided. The maps will also identify whether the pipe is active, inactive, or abandoned. The age of all pipes requiring identification pursuant to this Condition will be documented in an Attachment to the submittal. If the age cannot be documented, an estimate of the age of the pipe will be provided based upon best engineering judgment. These maps need not include the pipes within a fenced tank farm or within a building/structure. These maps will be compiled using documented QA/QC control methods and procedures outlined in DOE/RL-96-50, *Hanford Facility RCRA Permit Mapping and Marking of Dangerous Waste Underground Pipelines Report*, September 1996. These maps and any Attachments will be maintained in the Facility Operating Record and be updated annually as required by Permit Condition II.U.4.

II.U.4 Permittees will maintain current all maps required by Permit Condition II.U.3. These maps will be updated to incorporate new or revised information available by March 30th of each year. By September 30th of each year, the Permittees will submit to Ecology a list of maps that have been updated. The updated maps (including any Attachments) and the annual list submitted to Ecology will be maintained in the Facility Operating Record.

II.V Marking of Underground Piping

The Permittees will maintain marking of underground pipelines located outside the 200 East, 200 West, 300, 400, 100N, and 100K Areas. These pipelines will be marked at the point they pass beneath an area fence, at their origin and destination, at any point they cross an improved road, and every 100 meters along the pipeline corridor where practicable. The markers will be labeled with a sign that reads "Buried Dangerous Waste Pipe" and will be visible from a distance of fifteen (15) meters.

II.W Other Permits and/or Approvals

II.W.1 The Permittees will be responsible for obtaining all other applicable federal, state, and local permits authorizing the development and operation of the Facility. To the extent that work required by this Permit must be done under a permit and/or approval pursuant to other regulatory authority, the Permittees will use their best efforts to obtain such permits.

II.W.2 All other permits related to dangerous waste management activities are severable and enforceable through the permitting authority under which they are issued.

II.W.3 All air emissions from units subject to this Permit will comply with all applicable state and federal regulations pertaining to air emission controls, including but not limited to, Chapter 173-400 WAC, General Regulations for Air Pollution Sources; Chapter 173-460 WAC, Controls for New Sources of Toxic Air Pollutants; and Chapter 173-480 WAC, Ambient Air Quality Standards and Emission Limits for Radionuclides.

II.X Schedule Extensions

II.X.1 The Permittees will notify Ecology in writing, as soon as possible, of any deviations or expected deviations, from the schedules of this Permit. The Permittees will include with the notification all information supporting their claim that they have used best efforts to meet the required schedules. If Ecology determines that the Permittees have made best efforts to meet the schedules of this Permit, Ecology will notify the Permittees in writing by certified mail, that the Permittees have been granted an extension. Such an extension will not require a Permit modification under Permit Condition I.C.3. Should Ecology determine that the Permittees have not made best efforts to meet the schedules of this Permit, Ecology may take such action as deemed necessary.

Copies of all correspondence regarding schedule extensions will be kept in the Operating Record.

II.X.2 Any schedule extension granted through the approved change control process identified in the HFFACO will be incorporated into this Permit. Such a revision will not require a Permit modification under Permit Condition I.C.3.

II.Y Corrective Action

In accordance with WAC 173-303-646 and WAC 173-303-815(2)(b)(ii), the Permittees must conduct corrective action, as necessary to protect human health and the environment, for releases of dangerous waste and dangerous constituents from solid waste management units and areas of concern at the Facility, including releases that have migrated beyond the Facility boundary. The Permittees may be required to implement measures within the Facility to address releases, which have migrated beyond the Facility's boundary. As specified in permit conditions II.Y.1.g, II.Y.2.a.iii, and II.Y.2.a.ii, the Permittee's right to challenge Ecology's authority to impose corrective action with respect to radionuclides, CERCLA Past Practice (CPP) Units (as identified under Permit Condition II.Y.2.a) and selected solid waste management units not covered by the HFFACO at property currently subleased to US Ecology, Inc. (as identified under Permit Condition II.Y.3.a.i), is reserved until such time as Ecology chooses to impose corrective action in accordance with the permit modification procedures of WAC 173-303-830.

II.Y.1 Compliance with Chapter 173-340 WAC

In accordance with WAC 173-303-646, the Permittee must conduct corrective action "as necessary to protect human health and the environment". To ensure that corrective action will be conducted as necessary to protect human health and the environment, except as provided in Permit Condition II.Y.2, the Permittee must conduct corrective action in a manner consistent with the following provisions of Chapter 173-340 WAC:

II.Y.1.a As necessary to select a cleanup action in accordance with WAC 173-340-360 and WAC 173-340-350 State Remedial Investigation and Feasibility Study.

II.Y.1.b WAC 173-340-360 Selection of Cleanup Actions.

II.Y.1.c WAC 173-340-400 Cleanup Actions.

II.Y.1.d WAC 173-340-410 Compliance Monitoring Requirements.

II.Y.1.e WAC 173-340-420 Periodic Site Reviews.

II.Y.1.f WAC 173-340-440 Institutional Controls.; and

II.Y.1.g WAC 173-340-700 through -760 Cleanup Standards, except that to the extent that Ecology seeks to impose corrective action with respect to radionuclides regulated under the provisions of the Atomic Energy Act, as amended, 42 U.S.C. § 2011 et.seq. (AEA), the Permittees may challenge Ecology's authority to impose such corrective action through a timely appeal of the Permit modification issued by Ecology without argument from Ecology that such right has been waived by a failure to fully litigate that issue through an appeal taken within thirty (30) days of the issuance of this Permit, and without argument from the Permittees that such requirement fails to satisfy a cause for Permit modification under WAC 173-303-830(3)(a).

II.Y.2 Acceptance of Work Under Other Authorities or Programs and Integration with the HFFACO.

Corrective action is necessary to protect human health and the environment for all units identified in Appendix B and Appendix C of the HFFACO. Notwithstanding Permit Condition II.Y.1, work under other cleanup authorities or programs, including work under the HFFACO, may be used to satisfy corrective action requirements, provided it protects human health and the environment.

II.Y.2.a For past practice units identified in Appendix C of the HFFACO, as amended, as CERCLA Past Practice (CPP) Units, Ecology accepts work under the HFFACO, as amended, and under the CERCLA program, as satisfying corrective action requirements to the extent provided for in, and subject to the reservations and requirements of, Permit Conditions II.Y.2.a.i through II.Y.2.a.iv.

II.Y.2.a.i For any past practice unit identified in Appendix C of the HFFACO as a CPP unit, the Permittee must comply with the requirements and schedules related to investigation and cleanup of the CPP unit(s) developed and approved under the HFFACO, as amended. The requirements and schedules related to investigation and cleanup of CPP units currently in place under the HFFACO, as amended, and in the future developed and approved under the HFFACO, as amended, are incorporated into this Permit by this reference and apply under this Permit as if they were fully set forth herein. If the Permittee is not in compliance with requirements of the HFFACO, as amended, that relate to investigation or cleanup of CPP unit(s), Ecology may take action to independently enforce the requirements as corrective action requirements under this Permit.

II.Y.2.a.ii For any past practice unit identified in Appendix C of the HFFACO as a CPP unit, in the case of an interim Record of Decision (ROD), a final decision about satisfaction of corrective action requirements will be made in the context of issuance of a final ROD.

II.Y.2.a.iii If EPA and Ecology, after exhausting the dispute resolution process under Section XXVI of the HFFACO, cannot agree on requirements related to investigation or cleanup of CPP unit(s), Ecology will notify the Permittees, in writing, of the disagreement and impose, in accordance with the permit modification procedures of WAC 173-303-830, a requirement for the Permittees to conduct corrective action for the subject units(s) in accordance with Permit Condition II.Y.1. The Permittees may challenge Ecology's authority to impose such corrective action requirements through a timely appeal of such Permit modification, without argument from Ecology that the Permittee's right to raise such challenge has been waived by a failure to fully litigate that issue through an appeal taken within thirty (30) days of the issuance of this Permit, and without argument from the Permittee that such requirement fails to satisfy a cause for Permit modification under WAC 173-303-830(3)(a). Within 60 days of receipt of the above Permit modification, or within some other reasonable period of time agreed to by Ecology and the Permittees, the Permittees must submit for Ecology review and approval, a plan to conduct corrective action in accordance with Permit Condition II.Y.1 for the subject unit(s). The Permittee's plan may include a request that Ecology evaluate work under another authority or program. Approved corrective action plans under this Permit Condition will be incorporated into this Permit in accordance with the Permit Modification Procedures of WAC 173-303-830.

II.Y.2.a.iv The Permittees must maintain information on corrective action for CPP units covered by the HFFACO in accordance with Sections 9.0 and 10.0 of the HFFACO Action Plan. In addition, the Permittees must maintain all reports and other information developed in whole, or in part, to implement the requirements of Permit Condition II.Y.2.a, including reports of investigations and all raw data, in the Hanford Facility Operating Record in accordance with Permit Condition II.I. Information that is maintained in the Hanford Site Administrative Record may be incorporated by reference into the Hanford Facility Operating Record.

II.Y.2.b For past practice units identified in Appendix C of the HFFACO, as amended, as RCRA-CERCLA Past Practice (R-CPP) units, Ecology accepts work under the HFFACO, as amended, as satisfying corrective action requirements to the extent provided for, and subject to the reservations and requirements of, Permit Conditions II.Y.2.b.i through II.Y.2.b.ii.

II.Y.2.b.i For any past practice unit identified in Appendix C of the HFFACO, as amended, as an R-CPP unit, the Permittees must comply with the requirements and schedules related to investigation and cleanup of R-CPP units developed and approved under the HFFACO, as amended. The requirements and schedules related to investigation and cleanup of R-CPP units currently in place under the HFFACO, as amended, and in the future developed and approved under the HFFACO, as amended, are incorporated into this Permit by this reference and apply under this Permit as if they were fully set forth herein. If the Permittee is not in compliance with requirements and schedules related to investigation and cleanup of R-CPP units developed and approved under the HFFACO, as amended, Ecology may take action to independently enforce the requirements as corrective action requirements under this Permit.

II.Y.2.b.ii The Permittees must maintain information on corrective action for R-CPP units covered by the HFFACO, as amended, in accordance with Sections 9.0 and 10.0 of the HFFACO Action Plan. In addition, the Permittees must maintain all reports and other information developed in whole, or in part, to implement the requirements of Permit Condition II.Y.2.b, including reports of investigations and all raw data, in the Hanford Facility Operating Record in accordance with Permit Condition II.I. Information that is maintained in the Hanford Site Administrative Record may be incorporated into the Hanford Facility Operating Record by reference.

II.Y.2.c For each TSD unit, when the Permittees submit a certification of closure or a certification of completion of post-closure care, or at an earlier time agreed to by Ecology and the Permittees, the Permittees must, at the same time, either:

II.Y.2.c.i Document that the activities completed under closure and/or post-closure satisfy the requirements for corrective action; or

II.Y.2.c.ii If the activities completed under closure and/or post-closure care do not satisfy corrective action requirements, identify the remaining corrective action requirements and the schedule under which they will be satisfied, if remaining corrective action requirements will be satisfied by work developed and carried out under the HFFACO provisions for R-CPP units or CPP units, a reference to the appropriate R-CPP or CPP process and schedule will suffice.

II.Y.2.c.iii Ecology will make final decisions as to whether the work completed under closure or post-closure care satisfies corrective action, specify any unit-specific corrective action requirements, and incorporate the decision into this Permit in accordance with the permit modification procedures of WAC 173-303-830.

II.Y.2.d Notwithstanding any other condition in this Permit, Ecology may directly exercise any administrative or judicial remedy under the following circumstances:

II.Y.2.d.i Any discharge or release of dangerous waste, or dangerous constituents, which are not addressed by the HFFACO, as amended.

II.Y.2.d.ii Discovery of new information regarding dangerous constituents or dangerous waste management, including but not limited to, information about releases of dangerous waste or dangerous constituents which are not addressed under the HFFACO, as amended.

II.Y.2.d.iii A determination that action beyond the terms of the HFFACO, as amended, is necessary to abate an imminent and substantial endangerment to the public health, or welfare, or to the environment.

II.Y.3 Releases of Dangerous Waste or Dangerous Constituents Not Covered By the HFFACO:

II.Y.3.a US Ecology

II.Y.3.a.i The following solid waste management units are not covered by the HFFACO:

II.Y.3.a.i.a US Ecology, Inc., SWMU 1: Chemical Trench.

II.Y.3.a.i.b US Ecology, Inc., SWMU 2-13: Low-Level Radioactive Waste Trenches 1 through 11A.

II.Y.3.a.i.c US Ecology, Inc., SWMU 17: Underground Resin Tank.

II.Y.3.a.ii Selected solid waste management units identified in Permit Condition II.Y.3.a.i are currently being investigated by US Ecology in accordance with the Comprehensive Investigation US Ecology – Hanford Operations Workplan. Following completion of this investigation and any closure required of such solid waste management unit under the authority of the Washington State Department of Health, or within one year of the effective date of this Permit Condition, whichever is earlier, Ecology will make a tentative decision as to whether additional investigation or cleanup is necessary to protect human health or the environment for the solid waste management units identified in Permit Condition II.Y.3.a.i, and publish that decision as a draft permit in accordance with WAC 173-303-840(10). Following the associated public comment period, and consideration of any public comments received during the public comment period, Ecology will publish as final Permit conditions under WAC 173-303-840(8) either:

II.Y.3.a.ii.a A decision that corrective action is not necessary to protect human health or the environment;

II.Y.3.a.ii.b An extension to the schedule established under Permit Condition II.Y.3.a.ii, or

II.Y.3.a.ii.c A decision, that corrective action, in accordance with Permit Condition II.Y.1, is necessary to protect human health or the environment.

II.Y.3.a.iii If Ecology decides under Permit Condition II.Y.3.a.ii that corrective action is necessary to protect human health or the environment, the Permittees may challenge Ecology's authority to impose such corrective action requirements through a timely appeal of such permit modification, without argument from Ecology that the right to raise such challenge has been waived by a failure to fully litigate that issue through an appeal taken within 30 days of the issuance of this Permit, and with argument from the Permittees that such requirement fails to satisfy a cause for permit modification under WAC 173-303-830(3)(a). Within 180 days of receipt of the above Permit modification, the Permittees must submit, for Ecology review and approval, a plan to conduct corrective action in accordance with Permit Condition II.Y.1. Approved corrective action plans under this condition will be incorporated into this Permit in accordance with the Permit Modification Procedures of WAC 173-303-830.

II.Y.3.b Newly Identified Solid Waste Management Units and Newly Identified Releases of Dangerous Waste or Dangerous Constituents.

The Permittees must notify Ecology of all newly-identified solid waste management units and all newly-identified areas of concern at the Facility. For purposes of this condition, a 'newly-identified' solid waste management unit or a 'newly-identified' area of concern is a unit or area not identified in the HFFACO, as amended, on the effective date of this condition and not identified by Permit Condition II.Y.3.a.

Notification to Ecology must be in writing and must include, for each newly-identified unit or area, the information required by WAC 173-303-806(4)(a)(xxiii) and WAC 173-303-806(4)(a)(xxiv). Notification to Ecology must occur at least once every calendar year, in January, and must include all units and areas newly identified since the last notification, except that if a newly identified unit or area may present an imminent and substantial endangerment to human health or the environment, notification must occur within five days of identification of the unit or area. If information required by WAC 173-303-806(4)(a)(xxiii) or WAC 173-303-806(4)(a)(xxiv) is already included in the Waste Information Data System, it may be incorporated by reference into the required notification.

II.Z Waste Minimization

In accordance with WAC 173-303-380(1)(q), and Section 3005(h) of RCRA, 42 U.S.C. 6925(h), the Permittee must place a certification in the Hanford Facility Operating Record, Unit-Specific Files on an annual basis that:

II.Z.1.a A program is in place to reduce the volume and toxicity of hazardous waste generated to the degree determined by the Permittee to be economically practicable; and,

II.Z.1.b The proposed method of treatment, storage or disposal is that practicable method currently available to the Permittee, which minimizes the present and future threat to human health and the environment.

II.Z.2 The Permittee will maintain each such certification of waste minimization in the operating record as required by Permit Condition II.I.1.

II.AA Air Emission Standards for Process Vents

The Permittees will comply with applicable requirements of WAC 173-303-690 for process vents associated with Part III units performing specific separations processes unless exempted by WAC 173-303-690(1)(d). Threshold limits applied to process vents potentially requiring emission controls subject to WAC 173-303-690 are evaluated based on the summation of applicable emission sources for the entire Hanford Facility. When the summed emissions fall below threshold limits in 40 CFR 264.1032(a)(1), no emission control devices are required. If threshold limits in 40 CFR 264.1032(a)(1) are predicted to be exceeded, the Permittees will notify Ecology to determine the appropriate course of action. Unit-specific information is contained in Part III of the Permit for applicable units.

II.BB Air Emission Standards for Equipment Leaks

The Permittees will comply with applicable requirements of WAC 173-303-691 for certain equipment leaks associated with Part III units unless exempted by WAC 173-303-691(1)(e) or (f). Air emission standards apply to equipment that contacts or contains hazardous wastes with organic concentrations of at least 10 percent by weight. Unit-specific information is contained in Part III of the Permit for applicable units.

II.CC Air Emission Standards for Tanks, Surface Impoundments, and Containers

The Permittees shall comply with applicable requirements of WAC 173-303-692 for containers, tanks, and surface impoundment areas associated with Part III units unless exempted by WAC 173-303-692(1)(b). Unit-specific information is contained in Part III of the Permit for applicable units.

PART III UNIT-SPECIFIC CONDITIONS FOR FINAL STATUS OPERATIONS

Operating Unit 2, PUREX Storage Tunnels

Operating Unit 3, Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility

Operating Unit 4, 242-A Evaporator

Operating Unit 5, 325 Hazardous Waste Treatment Units

Operating Unit 10, Waste Treatment and Immobilization Plant

Operating Unit 11, Integrated Disposal Facility

Operating Unit 15, 331-C Storage Unit

Operating Unit 16, 400 Area Waste Management Unit

PART IV UNIT SPECIFIC CONDITIONS FOR CORRECTIVE ACTION

Corrective Action Unit 1, 100-NR-1

PART V UNIT-SPECIFIC CONDITIONS FOR UNITS UNDERGOING CLOSURE

Closure Unit 1, 1325-N Liquid Waste Disposal Facility

Closure Unit 2, 1301-N Liquid Waste Disposal Facility

Closure Unit 3, 1324-N Surface Impoundment and 1324-NA Percolation Pond

PART VI UNIT-SPECIFIC CONDITIONS FOR UNITS IN POST-CLOSURE

Post Closure Unit 1, 300 Area Process Trenches

Post Closure Unit 2, 183-H Solar Evaporation Basins

UNITS RETIRED FROM THE PERMIT

100 D Ponds (Closed 8/9/99)

105-DR Large Sodium Fire Facility (Closed 7/1/04)

100-NR-2 Operable Unit (9/30/09)

200 West Area Ash Pit Demolition Site (Closed 11/28/95)

2101-M Pond (Closed 11/28/95)

216-B-3 Expansion Ponds (Closed 7/31/95)

218-E-8 Borrow Pit Demolition Site (Closed 11/28/95)

224-T Transuranic Waste Storage and Assay Facility (Closed 11/12/08)

241-Z Treatment and Storage Tanks (Closed 2/22/07)

2727-S Nonradioactive Dangerous Waste Storage Facility (Closed 7/31/95)

300 Area Solvent Evaporator (Closed 7/31/95)

300 Area Waste Acid Treatment System (Closed 10/30/2005)

303-K Storage Facility (Closed 7/22/02)

303-M Oxide Facility (Closed 6/15/06)

304 Concretion Facility (Closed 1/21/96)

305-B Storage Facility (Closed 7/2/07)

3718-F Alkali Metal Treatment and Storage Facility Closure Plan (Closed 8/4/98)

4843 Alkali Metal Storage Facility Closure Plan (Closed 4/14/97)

Hanford Patrol Academy Demolition Site (Closed 11/28/95)

Plutonium Finishing Plant Treatment Unit (Closed 2/8/05)

Simulated High Level Waste Slurry Treatment and Storage Unit (Closed 10/23/95)

PERMIT ATTACHMENT 1
HANFORD FEDERAL FACILITY AGREEMENT AND CONSENT ORDER

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PERMIT ATTACHMENT 1
HANFORD FEDERAL FACILITY AGREEMENT AND CONSENT ORDER

Hanford Federal Facility Agreement and Consent Order (HHFACO), as amended, is also known as the Tri-Party Agreement (TPA). The latest revision of the document can be found by following this link: http://www.hanford.gov/page.cfm/TriParty

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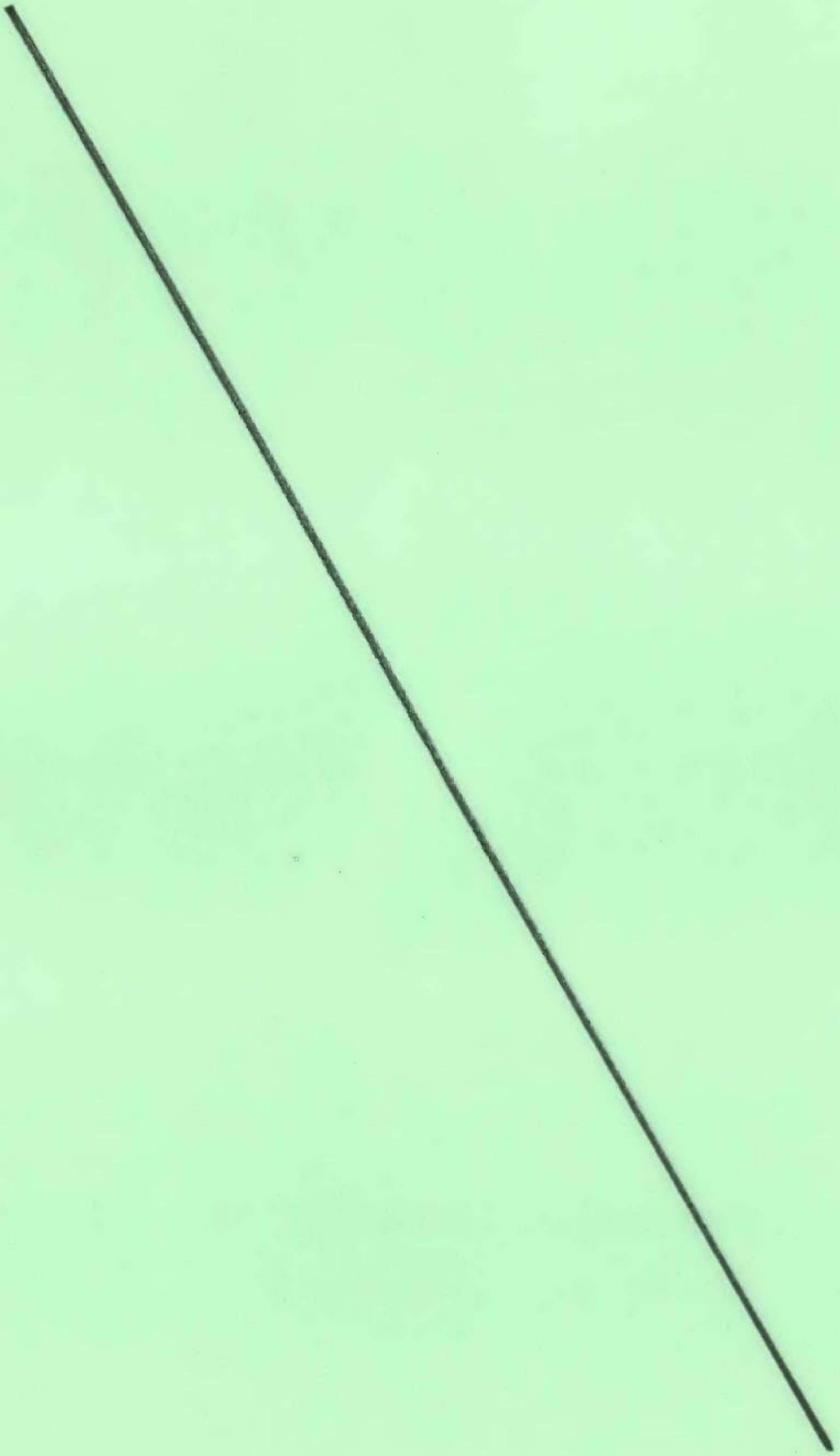

PERMIT ATTACHMENT 2
HANFORD FACILITY PERMIT
LEGAL DESCRIPTION & OPERATING BOUNDARY

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PERMIT ATTACHMENT 2
HANFORD FACILITY PERMIT
LEGAL DESCRIPTION & OPERATING BOUNDARY

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Hanford Facility Permit Legal Description

The following legal description describes the overall facility boundaries of the U.S. Department of Energy- Richland Office (DOE-RL) controlled Hanford Site. Individual treatment storage, and disposal (TSD) units use only a very small portion of the Hanford Site. Additional descriptive information on the individual TSD units is contained in Unit-Specific Portions.

The Hanford Site being a tract of land located in Adams, Grant, Benton, and Franklin Counties, WA, the aforesaid tract being more particularly described as follows:

Commencing at the point of intersection of the E.-W. centerline of sec. 14, T.10N., R.28E. Willamette Meridian, with the western navigation line of the Columbia River;

Thence northerly 200 feet along said line of navigation to the true point of beginning;

Thence North approximately 3237.08 feet to a line formed by the existing southernmost projection of the 300 Area fence line extending east N89°10'00"E;

Thence West S89°10'00"W along said fence line approximately 3886.22 feet to the East right of way line of Stevens Drive, an unplatted road;

Thence South along said right of way line approximately 3444.97 feet to the line's intersection with the North right of way line of Horn Rapids Road, an unplatted road.

Thence northwesterly along the N. right-of-way line of Horn Rapids Road 28,600 feet more or less to the line's intersection with the N. right-of-way line of State Highway 240, in the N.E. ¼ of sec. 11, T.10N., R.27E.W.M.;

Thence northwesterly along said N. right-of-way line of the highway, 75 feet N. of and parallel with the centerline of said highway to a point in sec. 3, T.10N., R.27E.W.M., which point is on the eastward extension of the N. right-of-way line of a county road from Horn Rapids to Benton City;

Thence along the northerly and westerly right-of-way line of said road, 75 feet northerly and westerly of, and parallel with, the center line of said road to a point on the E. line of sec. 8, T.10N., R.27E.W.M.;

Thence N. to the E. quarter corner of said section;

Thence W. to the S.W. corner of the E. ½ of the N.E. ¼ of sec. 12, T.10N., R.26E.W.M.;

Thence N. to the N. line of said sec. 12;

Thence W. to the N.E. corner of the N.W. ¼ of the N.W. ¼ of the N.W. ¼ of sec. 11, T.10N., R.26E.W.M.;

Thence S. 660 feet;

Thence W. 660 feet to the E. line of sec. 10, T.10N., R.26E.W.M.;

Thence S. to the S.E. quarter corner of said sec. 10;

Thence W. along the E.-W. centerline of sec. 10 to the W. line of said section;

Thence N. along the W. section line to the S.E. corner of sec. 4, T.10N., R.26E.W.M.;

Thence W. along the S. line of sec. 4 and sec. 5 to the S.W. corner of the S.E. ¼ of the S.E. ¼ of sec. 5;

Thence N. to the S.E. corner of the N.W. ¼ of the S.E. ¼ of sec. 5;

Thence W. along the S. line of the N.W. ¼ of the S.E. ¼ to the S.W. corner of the N.W. ¼ of the S.E. ¼;

Thence N. to the S.E. corner of the N. ½ of the N.W. ¼;

Thence W. along the S. line of the N. ½ of the N.W. ¼ to the W. line of sec. 5;

Thence N. to the S.E. corner of sec. 31, T.11N., R.26E.W.M.;

Thence W. along the S. line of the E. ½ of the S.E. ¼ of sec. 31 to the E. line of said E. ½ of the S.E. ¼ of sec. 31;

Thence N. along the W. line of the E. ½ of the S.E. ¼ to the S.E. corner of the S.W. ¼ of the N.E. ¼ of sec. 31;

Thence W. along the S. line of the S.W. ¼ of the N.E. ¼ to the S.W. corner of the S.W. ¼ of the N.E. ¼;
Thence N. along the W. line of the S.W. ¼ of the N.E. ¼ to the S.E. corner of the N. ½ of the N.W. ¼ of said sec. 31;
Thence W. along the S. line of the N. ½ of the N.W. ¼ to the W. line of said sec. 31;
Thence N. along the W. line of sec. 31 to the S.E. corner of sec. 25, T.11N., R.25E.W.M.;
Thence W. along the S. line of sec. 25 to the S.W. corner of the S.E. ¼ of the S.E. ¼ of said sec. 25;
Thence N. along the W. line of the S.E. ¼ of the S.E. ¼ to the S.E. corner of the N.W. ¼ of the S.E. ¼;
Thence W. along the S. line of the N.W. ¼ of the S.E. ¼ to the S.W. corner of the N.W. ¼ of the S.E. ¼;
Thence N. along the W. line of the N.W. ¼ of the S.E. ¼ to the S.E. corner of the N.W. ¼ of sec. 25;
Thence W. along the S. line of the N.W. ¼ of sec. 25 to the W. line of sec 25;
Thence N. along the W. line of sec. 25 and the W. line of sec. 24 to the N. line of the S. ½ of the S. ½ of sec. 23;
Thence W. along the N. line of the S. ½ of the S. ½ of sec. 23 and the N. line of the S. ½ of the S. ½ of sec. 22 and the N. line of the S. ½ of the S. ½ of sec. 21 to the E. line of sec. 20;
Thence S. to the S.E. corner of sec. 20;
Thence W. along the S. line of sec. 20 and the S. line of sec. 19 to the S.E. corner of the S.W. ¼ of the S.W. ¼ of sec. 19;
Thence N. to the N.E. corner of the S.W. ¼ of the S.W. ¼ of sec. 19;
Thence W. to the W. line of sec. 19, all being in T.11N., R.25E.W.M.;
Thence continuing W. to the S.W. corner of the N.E. ¼ of the S.E. ¼ of sec. 24, T.11N., R.24E.W.M.;
Thence N. to the N.W. corner of said N.E. ¼ of the S.E. ¼ of sec. 24;
Thence W. to the S.W. corner of the S.E. ¼ of the N.W. ¼ of sec. 24;
Thence N. to the N.W. corner of said S.E. ¼ of the N.W. ¼ of sec. 24;
Thence W. to the W. line of sec. 24;
Thence N. to the N.W. corner of sec. 24;
Thence W. to the S.E. quarter corner of sec. 14;
Thence N. to the N. quarter corner of sec. 14;
Thence W. along the N. line of sec. 14 to the N.W. corner of sec. 14;
Thence N. along the W. line of sec. 11 and sec. 2 to the N.W. corner of sec. 2, all being in T.11N., R.24E.W.M., and continuing N. along the W. lines of secs., 35, 26, 23, 14, 11, and 2, all being in T.12N., R.24E.W.M.;
Thence continuing N. along the W. lines of secs. 35 and 26 in T.13N., R.24E.W.M., to the N.W. corner of sec. 26;
Thence W. along the S. line of sec. 22 to the S.E. quarter corner of sec. 22;
Thence N. along the N.-S. centerline of sec. 22 to the N. quarter corner of sec. 22;
Thence W. along the S. line of sec. 15 to the S.W. corner of sec. 15;
Thence N. along the W. line of sec. 15 to the S.W. corner of the N. ½ of the N.W. ¼ of sec. 15;
Thence E. along the S. line of the N. ½ of the N.W. ½ of sec. 15 to the S.W. corner of the S.W. ¼ of the N.E. ¼ of sec. 15;
Thence N. along the W. line of the S.W. ¼ of the N.E. ¼ of sec. 15 and continuing N. along the centerline of sec. 10 to the N. line of sec. 10;
Thence E. along the N. line of sec. 10 to the N.E. corner of sec. 10;
Thence N. along the W. line of sec. 2 to the N.W. corner of sec. 2;
Thence E. along the N. line of sec. 2 to the N.E. corner of sec. 2 all being in T.13N., R.24E.W.M.;

Thence N. along the W. line of sec. 36, T.14N., R.24E.W.M.to the N.W. corner of sec. 36;
Thence E. to the S. quarter corner of sec. 25;
Thence N. to the center of sec. 25;
Thence E. to the E. quarter corner of sec. 25 all being in T.14N., R.24E.W.M.;
Thence N. to the N.W. corner of sec. 30, T.14N., R.25E.W.M.;
Thence E. to the N. quarter corner of sec. 30;
Thence N. to the center of sec. 19;
Thence E. to the E. quarter corner of sec. 19;
Thence N. to the N.W. corner of sec. 20;
Thence E. to the N. quarter corner of sec. 20;
Thence N. to the center of sec. 17;
Thence E. to the E. quarter corner of sec. 17 and continuing E. to the center of sec. 16;
Thence N. to the N. quarter corner of sec. 16;
Thence E. to the N.E. corner of sec. 16 and continuing E. to the N. quarter corner of sec. 15;
Thence N. to the center of section 10;
Thence E. to the E. quarter corner of sec. 10;
Thence N. to the N.W. corner of sec. 11;
Thence E. to the N. quarter corner of sec. 11;
Thence N. to the center of sec. 2;
Thence E. to the E. quarter corner of sec. 2;
Thence N. to the N.W. corner of sec. 1;
Thence E. to the N. quarter corner of sec. 1, all being in T.14N., R.25E.W.M.;
Thence N. to the center of sec. 36;
Thence E. to the E. quarter corner of sec. 36, all being in T.15N., R.25E.W.M.;
Thence N. to the N.W. corner of sec. 31, T.15N., R.26E.W.M.;
Thence E. to the N. quarter corner of sec. 31;
Thence N. to the center of sec. 30;
Thence E. to the E. quarter corner of sec. 30 and continuing E. to the center of sec. 29;
Thence N. to the N. quarter corner of sec. 29;
Thence E. to the N.E. corner of sec. 29;
Thence N. to the W. quarter corner of sec. 21;
Thence E. to the center of sec. 21;
Thence N. to the N. quarter corner of sec. 21;
Thence E. to the N.E. corner of sec. 21;
Thence N. to the W. quarter corner of sec. 15;
Thence E. to the E. quarter corner of sec. 15;
Thence N. to the N.W. corner of sec. 14;
Thence E. to the N.E. corner of sec. 14 and continuing E. to the N.E. corner of sec. 13, all being in T.15N., R.26E.W.M.;
Thence continuing E. along the N. lines of secs. 18, 17, and 16 of T.15N., R.27E.W.M. to the N.E. corner of sec. 16;
Thence S. to the W. quarter corner of sec. 15;
Thence E. to the E. quarter corner of sec. 15;

Thence S. to the S.E. corner of sec. 15;
Thence E. to the N. quarter corner of sec. 23;
Thence S. to the center of sec. 23;
Thence E. to the E. quarter corner of sec. 23;
Thence S. to the S.E. corner of sec. 23;
Thence E. to the N. quarter corner of sec. 25;
Thence S. to the center of sec. 25;
Thence E. to the E. quarter corner of sec. 25;
Thence S. to the S.E. corner of sec. 25, all being in T.15N., R.27E.W.M.;
Thence E. to the N. quarter corner of sec. 31, T.15N., R.28E.W.M.;
Thence S. to the S. quarter corner of sec. 31, all being in T.15N., R.28E.W.M.;
Thence continuing S. to the center of sec. 6, T.14N., R.28E.W.M.;
Thence E. to the E. quarter corner of sec. 6;
Thence S. to the S.E. corner of sec. 6 and continuing S. along the E. lines of secs. 7 and 18 to the S.E. corner of sec. 18;
Thence E. to the N. quarter corner of sec. 20;
Thence S. to the S. quarter corner of sec. 20 and continuing S. to the S. quarter corner of sec. 29;
Thence E. to the S.E. corner of sec. 29;
Thence S. to the S.E. corner of sec. 32, all being in T.14N., R.28E.W.M.;
Thence continuing S. along the E. lines of secs. 5, 8, 17, 20, and 29 to the S.E. corner of sec. 29;
Thence E. to the N.E. corner of sec. 33 and continuing to the E. line of the W. ½ of the W. ½ of sec. 34;
Thence S. along the E. line of the W. ½ of the W. ½ of sec. 34 to the N. line of the S. ½ of the S.W. quarter of said sec. 34;
Thence E. to the N.E. corner of the S. ½ of the S.W. ¼ of sec. 34;
Thence S. to the S. quarter corner of sec. 34, all being in T.13N., R.28E.W.M.;
Thence E. along the N. line of sec. 3, T.12N., R.28E.W.M. to the N.E. corner of sec. 3;
Thence S. along the E. lines of secs. 3 and 10 to the W. quarter corner of sec. 11;
Thence E. to the E. line of the W. ½ of the W. ½ of sec. 11;
Thence S. along the E. line of the W. ½ of the W. ½ of sec. 11 to the S. line of sec. 11;
Thence E. to the S. quarter corner of sec. 11;
Thence S. to the S. line of the N. ½ of the N. ½ of sec. 14;
Thence E. along the S. line of the N. ½ of the N. ½ of sec. 14 to the W. line of the E. ½ of the N.E. ¼ of sec. 14;
Thence S. along the W. line of the E. ½ of the N.E. ¼ of sec. 14 to the E.-W. centerline of sec. 14;
Thence E. to the E. quarter corner of sec. 14;
Thence S. to the S.E. corner of sec. 14;
Thence continuing S. to the S. line of Tract 4 of Ringold Tracts according to the plat filed in the records of Franklin County, WA;
Thence W. to the W. line of navigation of the Columbia River;
Thence southerly along the said W. line of navigation to the point of beginning.
EXCEPTING from the above-described land, Section 1, Township 11N., Range 26 East Willamette Meridian in the ownership under quitclaim deed, of the STATE OF WASHINGTON.

EXCEPTING from the above-described land, a parcel under quitclaim deed, to the National Utility Training and Education Center being a portion of the Northwest quarter of Section 16, Township 10 North, Range 28 East, W.M., Benton county, Washington and more particularly described as the follows:

Beginning at the Northwest corner of said section 16, Thence N89°32'46"E along the North line of said Section 16 a distance of 481.36 feet, Thence S00°00'09"W a distance of 4.87 feet to the true point of beginning; Thence N89°59'11"E a distance of 1412.12 feet; Thence S00°00'18"E a distance of 2569.49 feet to the North right of way line of Horn Rapids Road as recorded in Auditors File Number 621762, Records of Benton County; Thence commencing along said right of way of Horn Rapids Road S89°43'56"W a distance of 656.59 feet to a point of curve; Thence continuing along said North line along a curve to the right having a central angle of 17°26'30", a radius of 1084.57 feet, an arc distance of 330.16 feet; Thence continuing along said North line N72°49'34"W, a distance of 188.97 feet; Thence N00°00'09"E a distance of 852.06 feet; Thence N89°59'51"W a distance of 250.00 feet; Thence N00°00'09"E a distance of 1616.01 to the True Point of Beginning and containing 77.46 acres, more or less.

Hanford Facility Permit Operating Boundary

In response to requirement Washington Administrative Code (WAC) 173-303-806(xviii)(G) the following describes the legal boundary of the Hanford Site. Individual TSD units use only a very small portion of the Hanford Site. Additional descriptive information on the individual TSD units is contained in the Unit-Specific Portion of this permit application:

The Hanford Site being a tract of land located in Benton County, WA, the aforesaid tract being more particularly described as follows:

Commencing at the point of intersection of the E.-W. centerline of sec. 14, T.10N., R.28E. Willamette Meridian, with the western navigation line of the Columbia River;

Thence northerly 200 feet along said line of navigation to the TRUE POINT OF BEGINNING;

Thence North approximately 3237.08 feet to a line formed by the existing southernmost projection of the 300 Area fence line extending east N89°10'00"E;

Thence West S89°10'00"W along said fence line approximately 3886.22 feet to the East right of way line of Stevens Drive, an unplatted road;

Thence South along said right of way line approximately 3444.97 feet to the line's intersection with the North right of way line of Horn Rapids Road, an unplatted road.

Thence northwesterly along the N. right-of-way line of Horn Rapids Road 28,600 feet more or less to the line's intersection with the N. right-of-way line of State Highway 240, in the N.E. 1/4 of sec. 11, T.10N., R.27E.W.M.;

Thence northwesterly along said N. right-of-way line of the highway, 75 feet N. of and parallel with the centerline of said highway to a point in sec. 3, T.10N., R.27E.W.M., which point is on the eastward extension of the N. right-of-way line of a county road from Horn Rapids to Benton City;

Thence along the northerly and westerly right-of-way line of said road, 75 feet northerly and westerly of, and parallel with, the center line of said road to a point on the E. line of sec. 8, T.10N., R.27E.W.M.;

Thence N. to the E. quarter corner of said section;

Thence W. to the S.W. corner of the E. 1/2 of the N.E. 1/4 of sec. 12, T.10N., R.26E.W.M.;

Thence N. to the N. line of said sec. 12;

Thence W. to the N.E. corner of the N.W. 1/4 of the N.W. 1/4 of the N.W. 1/4 of sec. 11, T.10N., R.26E.W.M.;

Thence S. 660 feet;

Thence W. 660 feet to the E. line of sec. 10, T.10N., R.26E.W.M.;

Thence S. to the S.E. quarter corner of said sec. 10;

Thence W. along the E.-W. centerline of sec. 10 to the W. line of said section;

Thence N. along the W. section line to the S.E. corner of sec. 4, T.10N., R.26E.W.M.;

Thence W. along the S. line of sec. 4 and sec. 5 to the S.W. corner of the S.E. 1/4 of the S.E. 1/4 of sec. 5;

Thence N. to the S.E. corner of the N.W. 1/4 of the S.E. 1/4 of sec. 5;

Thence W. along the S. line of the N.W. 1/4 of the S.E. 1/4 to the S.W. corner of the N.W. 1/4 of the S.E. 1/4;

Thence N. to the S.E. corner of the N. 1/2 of the N.W. 1/4;

Thence W. along the S. line of the N. 1/2 of the N.W. 1/4 to the W. line of sec. 5;

Thence N. to the S.E. corner of sec. 31, T.11N., R.26E.W.M.;

Thence W. along the S. line of the E. 1/2 of the S.E. 1/4 of sec. 31 to the E. line of said E. 1/2 of the S.E. 1/4 of sec. 31;

Thence N. along the W. line of the E. 1/2 of the S.E. 1/4 to the S.E. corner of the S.W. 1/4 of the N.E. 1/4 of sec. 31;

Thence W. along the S. line of the S.W. 1/4 of the N.E. 1/4 to the S.W. corner of the S.W. 1/4 of the N.E. 1/4;

Thence N. along the W. line of the S.W. 1/4 of the N.E. 1/4 to the S.E. corner of the N. 1/2 of the N.W. 1/4 of said sec. 31;

Thence W. along the S. line of the N. 1/2 of the N.W. 1/4 to the W. line of said sec. 31;

Thence N. along the W. line of sec. 31 to the S.E. corner of sec. 25, T.11N., R.25E.W.M.;

Thence W. along the S. line of sec. 25 to the S.W. corner of the S.E. 1/4 of the S.E. 1/4 of said sec. 25;

Thence N. along the W. line of the S.E. 1/4 of the S.E. 1/4 to the S.E. corner of the N.W. 1/4 of the S.E. 1/4;

Thence W. along the S. line of the N.W. 1/4 of the S.E. 1/4 to the S.W. corner of the N.W. 1/4 of the S.E. 1/4;

Thence N. along the W. line of the N.W. 1/4 of the S.E. 1/4 to the S.E. corner of the N.W. 1/4 of sec. 25;

Thence W. along the S. line of the N.W. 1/4 of sec. 25 to the W. line of sec 25;

Thence N. along the W. line of sec. 25 and the W. line of sec. 24 to the N. line of the S. 1/2 of the S. 1/2 of sec. 23;

Thence W. along the N. line of the S. 1/2 of the S. 1/2 of sec. 23 and the N. line of the S. 1/2 of the S. 1/2 of sec. 22 and the N. line of the S. 1/2 of the S. 1/2 of sec. 21 to the E. line of sec. 20;

Thence S. to the S.E. corner of sec. 20;

Thence W. along the S. line of sec. 20 and the S. line of sec. 19 to the S.E. corner of the S.W. 1/4 of the S.W. 1/4 of sec. 19;

Thence N. to the N.E. corner of the S.W. 1/4 of the S.W. 1/4 of sec. 19;

Thence W. to the W. line of sec. 19, all being in T.11N., R.25E.W.M.;

Thence continuing W. to the S.W. corner of the N.E. 1/4 of the S.E. 1/4 of sec. 24, T.11N., R.24E.W.M.;

Thence N. to the N.W. corner of said N.E. 1/4 of the S.E. 1/4 of sec. 24;

Thence W. to the S.W. corner of the S.E. 1/4 of the N.W. 1/4 of sec. 24;

Thence N. to the N.W. corner of said S.E. 1/4 of the N.W. 1/4 of sec. 24;

Thence W. to the W. line of sec. 24;

Thence N. to the N.W. corner of sec. 24;

Thence W. to the S.E. quarter corner of sec. 14;

Thence N. to the N.W. quarter corner of sec. 14;

Thence W. along the N. line of sec. 14 to the N.W. corner of sec. 14;

Thence N. along the W. line of sec. 11 and sec. 2 to the N.W. corner of sec. 2, all being in T.11N., R.24E.W.M., and continuing N. along the W. lines of secs., 35, 26, 23, 14, 11, and 2, all being in T.12N., R.24E.W.M.;

Thence continuing N. along the W. lines of secs. 35 and 26 in T.13N., R.24E.W.M., to the N.W. corner of sec. 26;

Thence W. along the S. line of sec. 22 to the S.E. quarter corner of sec. 22;

Thence N. along the N.-S. centerline of sec. 22 to the N.E. quarter corner of sec. 22;

Thence W. along the S. line of sec. 15 to the S.W. corner of sec. 15;

Thence N. along the W. line of sec. 15 to the S.W. corner of the N. 1/2 of the N.W. 1/4 of sec. 15;

Thence E. along the S. line of the N. 1/2 of the N.W. 1/4 of sec. 15 to the S.W. corner of the N.W. 1/4 of the N.E. 1/4 of sec. 15;

Thence N. along the W. line of the S.W. 1/4 of the N.E. 1/4 of sec. 15 and continuing N. along the centerline of sec. 10 to the W. navigation line of the Columbia River, following said navigation line easterly, northerly, and southerly to a point directly W. of the S. line of Tract 4 of Ringold Tracts according to the plat filed in the records of Franklin County.

Thence southerly along the said W. line of navigation to the TRUE POINT OF BEGINNING.

EXCEPTING FROM THE ABOVE-DESCRIBED LAND THE FOLLOWING PARCELS, EXCLUDING that portion of the Hanford Railroad and any Hanford Site access roads, which may traverse these parcels:

PARCEL A) The N. 1/2 of the N.W. 1/4, and that portion of the N.W. 1/4 of the N.E. 1/4 in sec. 14, T.13N., R.24E.W.M. in the ownership and jurisdiction of the BONNEVILLE POWER ADMINISTRATION.

PARCEL B) Sec. 1, T.11N., R.26E.W.M. in the ownership under quitclaim deed, of the STATE OF WASHINGTON.

PARCEL C) A tract of land leased to the STATE OF WASHINGTON and subleased to U.S. Ecology lying in section 9, T.12N., R.26E.W.M., containing 100 acres more or less, more particularly described as follows: BEGINNING at the Southwest corner of said Section 9; thence North 0E 53' 09" West along the East line of Section 9 a distance of 2,942 feet, thence South 88E 50' 56" West 1,480 feet, thence South88E 53' 09" East 2,942 feet to the South line of the Section; thence North 88E 50' 56" East along said South line of the Section 1,480 feet to the point of beginning.

Three tracts of land leased to the WASHINGTON PUBLIC POWER SUPPLY SYSTEM more particularly described as follows:

PARCEL D) a tract of land (for the Hanford Generating Plant), commencing at the S.E. corner of sec. 28, T.14N., R.26E.W.M., said point having Washington State Coordinates, South Zone, of N. 486,994.01, and E. 2,236,672.11; thence N. 72E 02' 15" W. 3,483.15 feet, thence N. 67E 11' 41" W. 1,810 feet more or less to a point on the line of ordinary high water on the right bank of the Columbia River, which point is the TRUE POINT OF BEGINNING: thence S. 67E 11' 41" E. 1,810 feet more or less to a point, having Washington State Coordinates, South Zone, of N. 488,068.19 and E. 2,233,358.73, thence N. 22E 48' 19" E. a distance of 1,595 feet to a point, having Washington State Coordinates, South Zone, of N. 489,538.48 and E. 2,233,976.96, thence N. 67E 11' 41" W. 1,108 feet more or less to a point on the line of ordinary high water on the right bank of the Columbia River, thence southwesterly along the said line of ordinary high water to the TRUE POINT OF BEGINNING, containing 53.42 acres more or less; THIS PARCEL AMENDED BY DELETING THE FOLLOWING: Beginning at the S.E. corner of the leased parcel, which point is at coordinates N. 488,068.19 and E. 2,233,358.73 on the Washington State Coordinate, South Zone; thence N. 22E 48' 19" E. 1,060 feet; thence N. 67E 11' 41" W. 200 feet; thence S. 22E 48' 19" W. 1,060 feet; thence S. 67E 11' 41" E. 200 feet to the point of beginning; containing 4.85 acres, more or less;

PARCEL E) a tract of land (for WNP Site 2), beginning at the S.W. corner of sec. 11, T.11N., R.28E.W.M., said corner having Washington State coordinates, South Zone, of N. 408,335.30 and E. 2,307,653.50, thence N. 0E 41' 08" E. 8,065.28 feet to the TRUE POINT OF BEGINNING; thence W. 11,153.57 feet; thence S. 01E 01' 23" E. 3,000.48 feet; thence S. 88E 53' 54" W. 5,200.96 feet; thence N. 0E 31' 41" W. 3,690.15 feet; thence E. 1,430.00 feet; thence N. 1,865.69 feet; thence N. 87E 46' 08" E. 3,703.83 feet; thence S. 01E 01' 23" E. 1,600.25 feet; thence E. 11,189.29 feet; thence N. 01E 01' 23" E. 1,800.29 feet; thence N. 89E 07' 55" E. 3,300.38 feet to the line of Navigation of the W. bank of the Columbia River, thence southerly along said line of Navigation to a point that bears N. 89E 15' 21" E. from the TRUE POINT OF BEGINNING; thence S. 89E 15' 21" W. 3,850.32 feet more or less to the TRUE POINT OF BEGINNING.

PARCEL F) A tract of land (for WNP Sites 1 and 4) lying in Section 4 of Township 11 North, Range 28 East, Willamette Meridian, described as follows:

Beginning at the Southwest corner of Section 11, Township 11 North, Range 28 East, W.M., (said corner being located by reference to the Washington State Coordinate System South Zone at coordinates North 408,335.30 and East 2,307,653.50) thence North 65E-17'-03" West 12113.14 feet to the TRUE POINT OF BEGINNING (said point being located by reference to the Washington State Coordinate System South Zone at coordinates North 413,400.00 and East 2,296,650.00); thence North 01E-01'-23" West 3000.48 feet to a point; thence East 5280.00 feet to a point; thence South 01E-01'-23" East 3000.48 feet to a point; thence West 5280.00 feet more or less to the TRUE POINT OF BEGINNING, containing 363.69 acres more or less; and

A parcel of land lying in Sections 3 and 4 of Township 11 North, Range 28 East, and Sections 33 and 34 of Township 12 North, Range 28 East, Willamette Meridian, described as follows:

Beginning at the Southwest corner of Section 11, Township 11 North, Range 28 East, W.M., (said corner being located by reference to the Washington State Coordinate System South Zone at coordinates North 408,335.30 and East 2,307,653.50) thence North 50E-42'-00" West 14,311.63 feet to the TRUE POINT OF BEGINNING (said point being located by reference to the Washington State Coordinate System South Zone at coordinates North 417,400.00 and East 2,296,578.57); thence North 01E-01'-23" West 3000.48 feet to a point; thence East 5,280.00 feet to a point; thence South 01E-01'-23" East 1200.19 feet to a point; thence East 5,973.57 feet to a point; thence South 1E-01'-23" West 1800.29 feet to a point; thence West 11,189.29 feet more or less to the TRUE POINT OF BEGINNING, containing 609.15 acres more or less.

PARCEL G) A parcel of Hanford Site land transferred out of federal ownership to the National Utility Training and Education Center being a portion of the Northwest quarter of Section 16, Township 10 North, Range 28 East, W.M., Benton county, Washington and more particularly described as the follows:

Beginning at the Northwest corner of said section 16, Thence N89°32'46"E along the North line of said Section 16 a distance of 481.36 feet, Thence S00°00'09"W a distance of 4.87 feet to the true point of beginning; Thence N89°59'11"E a distance of 1412.12 feet; Thence S00°00'18"E a distance of 2569.49 feet to the North right of way line of Horn Rapids Road as recorded in Auditors File Number 621762, Records of Benton County; Thence commencing along said right of way of Horn Rapids Road S89°43'56"W a distance of 656.59 feet to a point of curve; Thence continuing along said North line along a curve to the right having a central angle of 17°26'30", a radius of 1084.57 feet, an arc distance of 330.16 feet; Thence continuing along said North line N72°49'34"W, a distance of 188.97 feet; Thence N00°00'09"E a distance of 852.06 feet; Thence N89°59'51"W a distance of 250.00 feet; Thence N00°00'09"E a distance of 1616.01 to the True Point of Beginning and containing 77.46 acres, more or less.

PARCEL H) The parcels on the Hanford Site used but not owned by the Bonneville Power Administration including the Ashe Substation, the Hanford Substation, the Benton Switch Substation, and the White Bluffs Substation.

ASHE SUBSTATION. A parcel of land in the W. 1/2 S.E. 1/4, the S.E. 1/2 N.W. 1/4 and the S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian, Benton County, Washington, more particularly described as follows:

Commencing at a Bonneville Power Administration monument set at the intersection of the north-south and east-west base lines for the Ashe Substation Site in the S.E. 1/4 S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian. This monument is located N.26E49'15"E., 1503.1 feet from a 2-inch brass disc on the south line of Section 32, said disc being set by WPPSS survey of August 11, 1971. Thence N.52E10'10"E., 1200.0 feet to the true point of beginning. Thence S.37E49'50"E., 400.0 feet; thence S.52E10'10"W., 1100.0 feet; thence S.37E49'50"E., 1287.7 feet to a point on the south line of Section 32; thence S.87E46'12"W., along said south line of Section 32, a distance of 984.0 feet; thence N.37E49'50"W., 2014.8 feet; thence N.52E10'10"E., 1900.0 feet; thence S.37E49"50"E., 900.0 feet to the true point of beginning; containing 75.09 acres, more or less.

ASHE SS SOUTH CORRIDOR, PARCEL 1. A portion of Government Lot 3 of Section 5, Township 11 North, Range 28 East, Willamette Meridian, Benton County, Washington, more particularly described as follows:

Commencing at a point in Bay 3 in the Ashe Substation Site in the N.E. 1/4 S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian, said point being N.25E56'16"E., 1716.1 feet from a 2-inch brass disc on the south line of Section 32, said disc being set by WPPSS survey of August 11, 1971. Thence S.31E24'10"E., 553.5 feet; thence S.1E50'00"E., 1029.6 feet to a point on the north line of Section 5, Township 11 North, Range 28 East, Willamette Meridian, the true point of beginning for this description. Thence N.87E46'12"E., along said north line of Section 5, a distance of 75 feet; thence S.1E50'00"E., 1299.7 feet; thence S.88E10'00"W., 281.5 feet; thence N.1E50'00"W., 1297.6 feet to a point on said north line; thence N.87E46'12"E., along said north line, a distance of 206.5 feet to the true point of beginning.

ASHE SS SOUTH CORRIDOR, PARCEL 2. All that portion of the S.E. 1/4 S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian, Benton County, Washington, that lies southerly and easterly of the Ashe Substation Site and westerly of a line 75 feet easterly from and parallel with the survey line for the Bonneville Power Administration WPPSS No. 2 Powerhouse-Ashe 500 kV line No. 2. The survey line is described, with reference to the Washington Coordinate System - South Zone, as follows:

Beginning at a point in Bay 3 in the Ashe Substation Site in the N.E. 1/4 S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian, at a survey Station 97+84.0, said point being N.25E56'16"E., 1716.1 feet from a 2-inch brass disc on the south line of Section 32, said disc being set by WPPSS survey of August 11, 1971. Thence S.31E24'10"E., 553.5 feet to station 92+30.5; thence S.1E50'00"E., 1029.6 feet to a point on the south line of Section 32, said point being N.87E46'12"E., 1072.1 feet from said brass disc.

ASHE-SS-AR-1. A portion of Lot 3 S.1/2 N.W. 1/4, and N.W. 1/4 S.W. 1/4 of Section 5, the E. 1/2 S.E. 1/4 and S.W. 1/4 S.E. 1/4 of Section 6, the N.W. 1/4 N.E. 1/4 and E. 1/2 N.W. 1/4 of Section 7, Township 11 North, Range 28 East, Willamette Meridian, Benton County. Washington.

HANFORD SUBSTATION SITE. Lot 1 of Block 8, Lots 13 and 14 of Block 9, and Lot 8 of Block 10 of Hanford, according to the recorded plat thereof, and that part of Thirteenth Street lying between the northeasterly line of Tract A of Hanford, according to the recorded plat thereof and the Columbia River, and that part of Dunham Street lying southeasterly of a line connecting the northwesterly lines of Lot 8 of Block 10 and Lot 13 of Block 9 of Hanford, according to the recorded plat thereof, all in Section 25, Township 13 North, Range 27 East, Willamette Meridian Benton County, Washington, containing 2.7 acres, more or less. Subject to easement to Pacific Power & Light Company for power line and access purposes.

BENTON SWITCH SUBSTATION. A parcel of land in the N.W. 1/4 of Section 11, Township 11 North, Range 28 East, Willamette Meridian, Benton County, Washington, described with reference to the Washington Coordinate System - South Zone, as follows:

Beginning at the northwest corner of said parcel, being S.54E50'E., 1804.0 feet more or less from the northwest corner of said Section 11; thence N.49E13'45"E., 550.0 feet to the northeast corner, evidenced by a brass cap; thence S.40E46'15"E., 500.0 feet to the southeast corner, evidenced by a brass cap; thence S.49E13'45"W., 550.0 feet to the southwest corner, evidenced by a brass cap; thence N.40E46'15"W., 500.0 feet to the point of beginning. The described parcel contains 6.31 acres, of which 2.75 acres lie within the boundaries of the existing Benton Switching Station.

WHITE BLUFFS SUBSTATION. A parcel of land in Government Lots 3 and 4 and the E. 1/2 S.W. 1/4 of Section 7, Township 10 North, Range 28 East, Willamette Meridian, Benton County, Washington, more particularly described as follows:

Commencing at a Bonneville Power Administration monument in said Government Lot 4 at the intersection of the east-west and north-south base lines for the White Bluffs Substation Site, said monument being N.36E45'35"E., 1623.7 feet from the southwest corner of Section 7. This corner is evidenced by a rock mound. Thence N.72E55'20"W., along the east-west base line, a distance of 500 feet to the true point of beginning. Thence N.17E04'40"E., 400 feet; thence S.72E55'20"E., 900 feet; thence S.17E04'40"W., 1060 feet, more or less, to a point 40 feet north of the centerline of Horn Rapids Road; thence N.72E55'20"W., 900 feet., thence N.17E04'40"E., 660 feet, more or less, to the true point of beginning, containing 21.90 acres, more or less.

For purposes of application of Part IV Corrective Action of the Hanford Facility Permit only, the Hanford Facility also includes PARCELS C, D, E, F, and G of the lands identified as Excepted from the ABOVE-DESCRIBED LAND, in the foregoing legal description.

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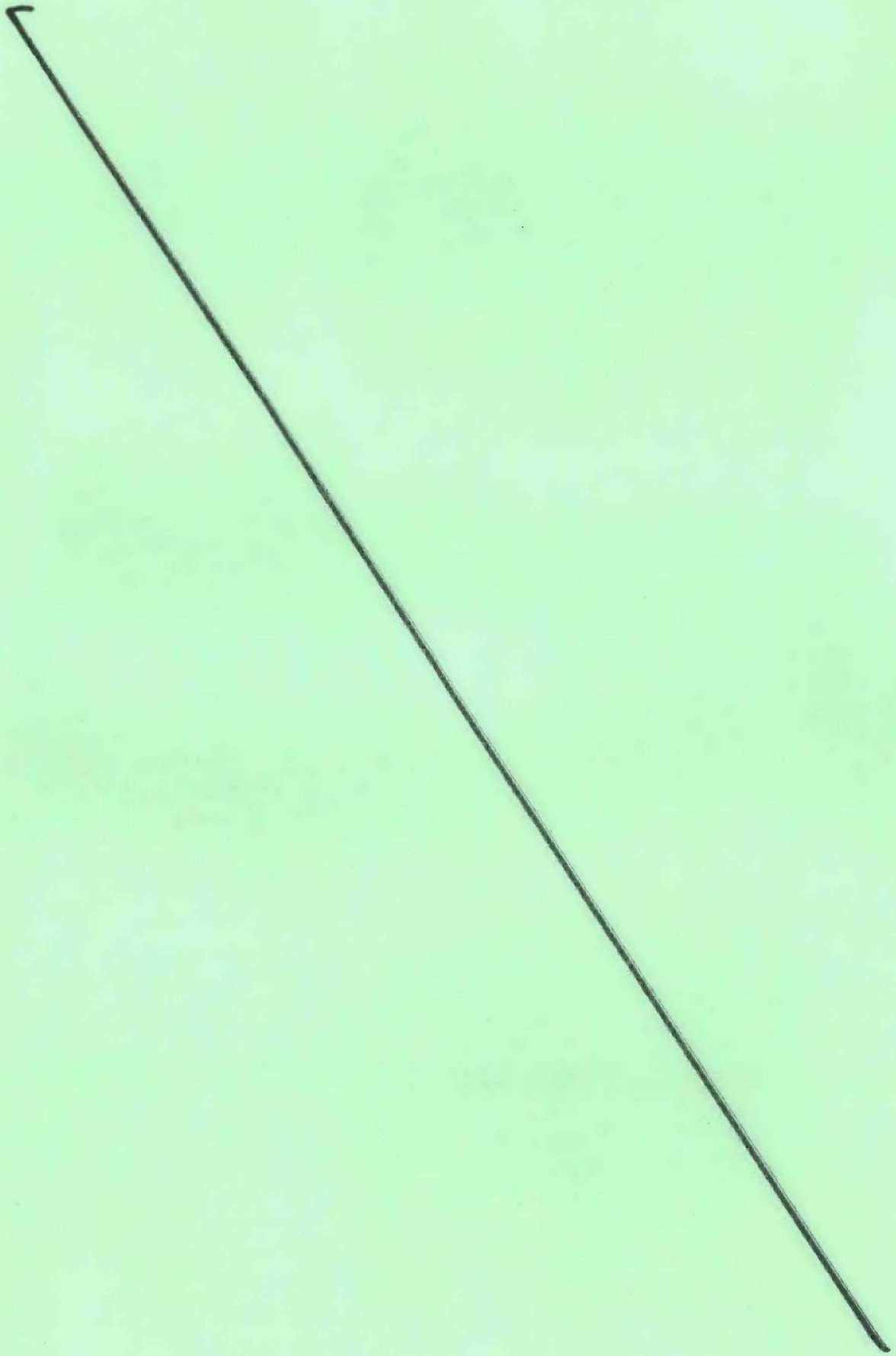

PERMIT ATTACHMENT 3
SECURITY

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PERMIT ATTACHMENT 3
SECURITY

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3 SECURITY

This Attachment addresses provisions contained in Hanford Facility Permit, WA7890008967 (Permit) Condition II.M.

The following sections describe the security measures, equipment, and warning signs used to control entry to the Hanford Facility at the facility level according to Permit Condition II.M. Additional security information for individual treatment, storage, and disposal (TSD) units and unit groups is located in the unit specific Permit conditions in Chapters III, V, and VI of this Permit.

3.1 Security Procedures and Equipment

This section describes the warning signs, 24-hour surveillance system, and barriers used to provide security and control access to the Hanford Facility, including active portions of the facility. The active portion of the facility means that portion of the facility where treatment, storage, or disposal of dangerous/mixed waste occurs.

3.1.1 Warning Signs

Operating TSD units and unit groups must comply with the requirements found in WAC 173-303-310(2)(a) regarding the placement of signs. Security information for operating TSD units and unit groups regarding the placement of signs is provided in the unit specific Permit conditions. Security information for non-operating TSD unit groups incorporated into the Permit Part III, Part V, or Part VI regarding the placement of signs is determined on a case-by-case basis. Typically, the Hanford Facility signs described below will be sufficient for non-operating unit.

Signs are posted at area boundaries within the Hanford Site stating *No Trespassing. Security Badges Required Beyond This Point. Authorized Vehicles Only. Public Access Prohibited* (or an equivalent legend). In addition, warning signs stating *Danger Unauthorized Personnel Keep Out* (or an equivalent legend) are posted at operating TSD units or unit groups or at active portions of operating TSD units or unit groups within the Hanford Facility. These signs are written in English, legible from a distance of 7.6 meters, and visible from all angles of approach.

3.1.2 Surveillance System

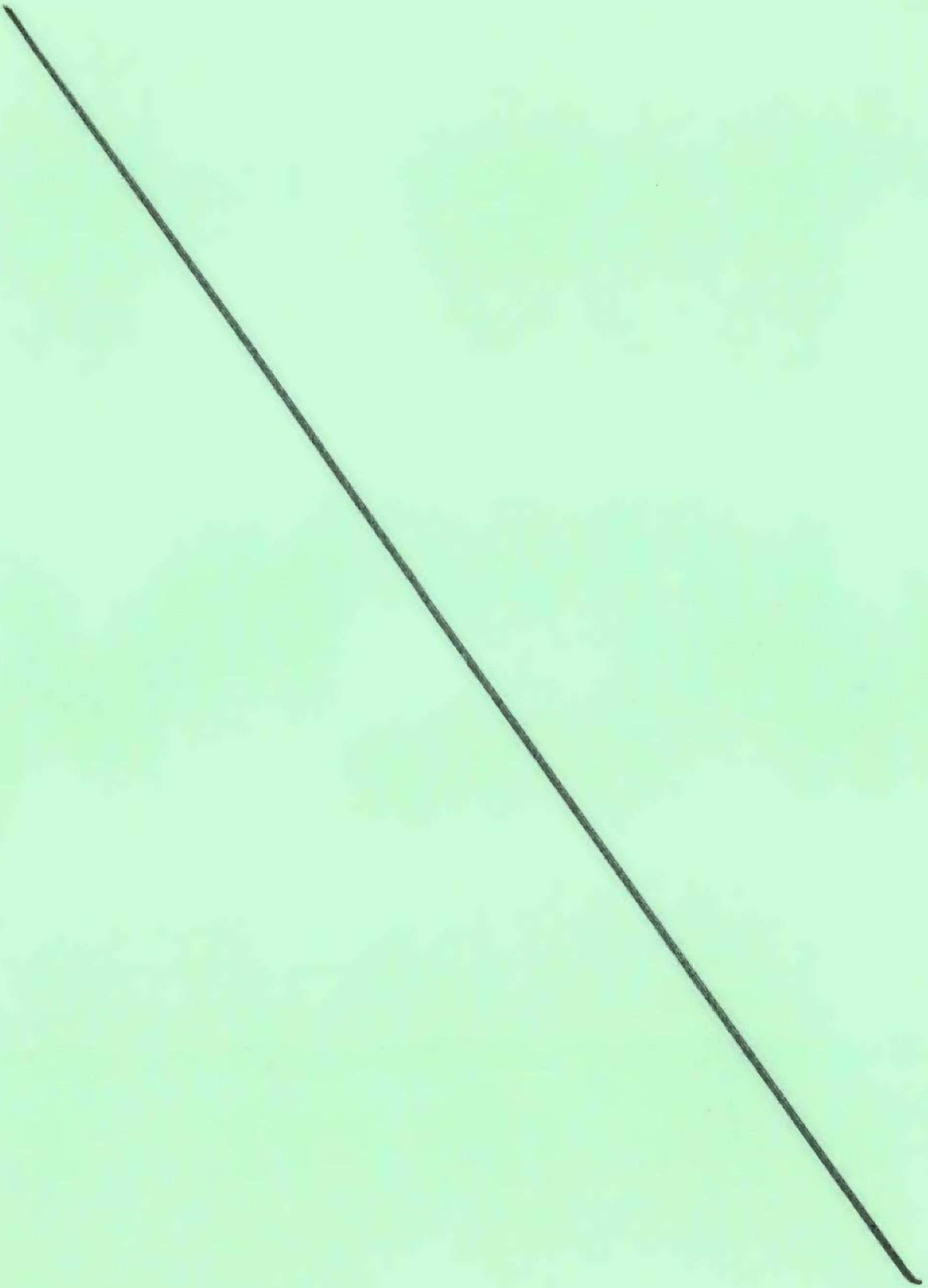
The entire Hanford facility is a controlled access area. The Hanford facility maintains 24-hour surveillance and access control systems for protection of government property, classified information, and special nuclear materials. The Hanford Patrol maintains a continuous presence of protective force personnel to provide additional security.

All personnel accessing locations on the Hanford Site (except for publicly accessible locations) must possess and display a U.S. Department of Energy (DOE) issued security identification badge indicating the appropriate authorization. All personnel entering or exiting the Hanford Site are subject to random security badge inspections by protective force personnel to validate access authorization. All vehicles and hand-carried items entering or exiting the Hanford Site are subject to random security inspections and searches by protective force personnel to validate access authorization and preclude the unauthorized introduction of prohibited/controlled articles, or the unauthorized removal of government or contractor assets. The surveillance systems in place satisfy the security requirements of WAC 173-303-310(2)(b), (a 24-hour surveillance system) at the Hanford Facility level.

3.1.3 Natural or Artificial Barriers

The majority of TSD units and unit groups are located within the controlled access area of the Hanford Site. Vehicular access to roads leading to the controlled area is through 24-hour controlled access points at the Wye, Yakima, and Rattlesnake barricades. The barricades are posted with restrictive signage to meet security requirements at the Hanford Facility level for the 100 Areas, 200 Areas, and 600 Area TSD units and unit groups. Perimeter fences, restrictive signage, and random protective force patrols are used to control access to the 300 Area and 400 Area. Additional means to bar entry or control access (e.g., fences, locked entry doors) are discussed, as necessary for 331-C Storage Unit, 325 Hazardous Waste Management Unit, and 400 Area Waste Management Unit in their unit specific Permit conditions.

The Hanford Facility level security systems are also in place to satisfy the security requirements of WAC 173-303-310(2)(c), (artificial or natural barriers).



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Revision 6

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Hanford Emergency Management Plan

Date Published
June 2014

Approved by:

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Richland Operations Office

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

U.S. DEPARTMENT OF ENERGY
Richland Operations Office

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Richland, Washington 99352

APPROVED
By Janis D. Aardal at 7:56 am, Jul 17, 2014

Release Approval Date

Approved for Public Release;
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ACRONYMS/ABBREVIATIONS

AEGL	Acute Exposure Guideline Level
ATL	Advanced Technologies and Laboratories, Inc.
BED	Building Emergency Director
BNI	Bechtel National, Inc.
BW	Building Warden
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHPRC	CH2M HILL Plateau Remediation Company
CPR	cardiopulmonary resuscitation
DOE	U.S. Department of Energy
DOE-HQ	U.S. Department of Energy, Headquarters
DOT	U.S. Department of Transportation
EAL	emergency action level
EAS	Emergency Alert System
Ecology	Washington State Department of Ecology
EDO	Emergency Duty Officer
EOC	Emergency Operations Center
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
EPHA	Emergency Planning Hazards Assessment
EPZ	emergency planning zone
ERAP	Emergency Readiness Assurance Plan
ERDF	Environmental Restoration Disposal Facility
ERG	Emergency Response Guidebook
ERO	emergency response organization
FAA	Federal Aviation Administration
FBI	Federal Bureau of Investigation
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
HPMC	HPM Corporation Occupational Medical Services
HQ	DOE-Headquarters
IC	Incident Commander
ICP	Incident Command Post
ICS	Incident Command System
JIC	Joint Information Center
MOU	memoranda of understanding
MSA	Mission Support Alliance, LLC.
NARAC	National Atmospheric Release Advisory Capability
NFPA	National Fire Protection Association
NIMS	National Incident Management System
ORP	U.S. Department of Energy, Office of River Protection
OSHA	Occupational Safety and Health Administration

ACRONYMS/ABBREVIATIONS (cont)

PAC	Protective Action Criteria
PAG	Protective Action Guideline
PAR	protective action recommendation
PCB	Polychlorinated biphenyl
PNNL	Pacific Northwest National Laboratory
PNSO	Pacific Northwest Site Office
POC	Patrol Operations Center
RAP	Radiological Assistance Program
RCRA	Resource Conservation and Recovery Act
RL	U.S. Department of Energy, Richland Operations Office
SCBA	self-contained breathing apparatus
SES	Office of Security and Emergency Services
SMT	Site Management Team
SRG	Scenario Review Group
TEDE	total effective dose equivalent
TEEL	Temporary Emergency Exposure Limit
TSD	treatment, storage, and disposal
UDAC	Unified Dose Assessment Center
USCG	U. S. Coast Guard
WAC	Washington Administrative Code
WCH	Washington Closure Hanford, Inc.
WRPS	Washington River Protection *Solutions*, LLC

1.0 INTRODUCTION

1.1 PURPOSE

The *Hanford Emergency Management Plan* incorporates into one document an overview of the Hanford Site emergency management program for the U.S. Department of Energy (DOE) Richland Operations Office (RL), Office of River Protection (ORP), Pacific Northwest Site Office (PNSO), and their respective site contractors. The program has been developed in accordance with DOE Orders as well as Federal and state regulations to protect worker and public health and safety and the environment in the event of an emergency at or affecting the Hanford Site.

This plan provides a description of how the Hanford Site will implement the provisions of DOE O 151.1C and other applicable DOE Orders in terms of overall policies and concept of operations. The plan should be used as the basis, along with DOE Orders, for the development of specific RL/ORP/PNSO and site contractor implementing procedures.

Additionally, portions of this plan, together with Hanford Site location/activity-specific documentation established to meet contingency plan requirements, meet the Washington Administrative Code (WAC) 173-303 requirements for the Hanford Site contingency plan. Many documents comprise the Hanford Site contingency plan. Applicability of this plan to Hanford Site activities is described in the Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit, Dangerous Waste Portion, General Condition II.A. General Condition II.A applies to Hanford Site activities at operating treatment, storage, and disposal (TSD) units, TSD units undergoing closure and/or post-closure activities, and to transportation incidents on the site in accordance with the applicability matrix delineated in Attachment 9 of the Hanford Facility RCRA Permit. For interim status TSD units and 90-day accumulation areas, these activities will be consistent with emergency preparedness policy and implementation techniques required by the Hanford Facility RCRA Permit, General Conditions II.A and II.B. Contingency plan requirements from WAC 173-303-350 met in this plan are identified in the crosswalk matrix in Appendix A.

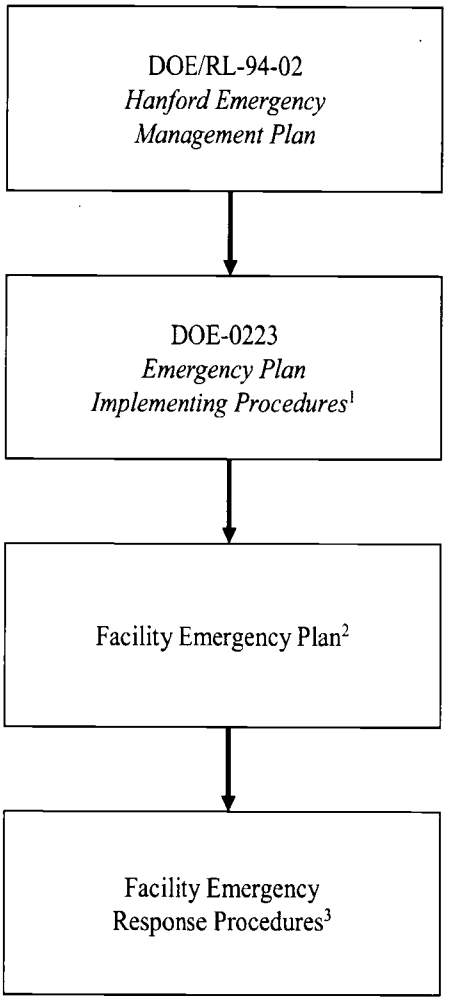
This plan, together with each Polychlorinated biphenyl (PCB) temporary accumulation area location/activity-specific documentation, also meets the requirements for a Spill Prevention Countermeasures and Control (SPCC) Plan and the notifications required by 40 CFR 761.[1]

1.2 SCOPE

Event response is governed by an emergency preparedness documentation hierarchy that is shown in Figure 1-1. This hierarchy generally follows an integrated contingency plan approach. In such an approach, one set of documentation responds to a number of requirements (e.g., environmental regulations and DOE Orders). The crosswalk contained in Appendix A illustrates portions of this plan that address the specified requirements.

This plan describes the overall emergency organization, authorities, and responsibilities for response to and mitigation of emergency events involving facilities and activities on the Hanford Site. These events include the full spectrum of operational emergencies, natural phenomena, transportation events, and safeguard and security emergencies. This plan also describes the authorities, responsibilities, and agreements for response to offsite and near-site facility emergencies that have the potential for detrimentally affecting the health of personnel and safety of operations at the Hanford Site.

[1] Permit requirement: Subsection 1.1 (fourth paragraph), Class 1 Modification 9/30/99



[1] Some site contractors may implement DOE-0223 actions through contractor-specific emergency management documentation.

[2] Facility emergency plans can include building emergency plans, facility response plans, or facility emergency information boards.

[3] In some facilities, the facility emergency plan and emergency response procedures are integrated.

RL/ORP/PNSO and site contractors shall develop and maintain procedures or other documents necessary to implement the emergency management program described in this plan.

For the Hanford Site, these procedures shall include, but not be limited to, the following.

- Site-wide emergency procedures used by RL/ORP/PNSO and site contractors that delineate:
  - the operation of the Hanford Incident Command System and responsibilities of the Incident Command Organization;
  - the responsibilities for the Hanford Emergency Operations Center (EOC);
  - recognition, categorization/classification, and notification of emergencies and other incidents;
  - protective action recommendations (PARs);
  - response to nonradiological hazardous substance spills or releases during transportation incidents occurring on the site not covered by TSD unit-specific contingency plans or building emergency plans;

    NOTE: The term hazardous substances is defined in WAC 173-303-040 as: "any liquid, solid, gas, or sludge, including any material, substance, product, commodity, or waste, regardless of quantity, that exhibits any of the physical, chemical or biological properties described in WAC 173-303-090 or 173-303-100." Whenever the term "hazardous substances" is used in this document to denote the WAC 173-303 definition, the term will be referred to as "WAC hazardous substance." Otherwise, a hazardous substance will mean those regulated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).
  - response to PCB spills or releases in accordance with 40 CFR 761;[2]
  - termination, reentry, and recovery for DOE Order emergencies and events that meet RCRA contingency plan implementation criteria; and
  - response to onsite and offsite shipments of DOE-owned radiological and nonradiological hazardous materials.
- Site contractor emergency procedures that:
  - enable the implementation of the responsibilities of the site contractors;
  - supplement, as necessary, implementation of RL/ORP/PNSO emergency procedures;
  - include facility and organizational plans and procedures for response to, and recovery and restoration from, specific emergency conditions, to include bomb threats, at Hanford Site facilities; and

[2] Permit requirement: Subsection 1.2 (first bullet, sixth dash), Class 1 Modification 9/30/99

- include building emergency plans and/or procedures which are required for buildings, facilities, and structures defined as a nuclear or reactor facility, regulated by the Washington State Department of Ecology (Ecology) Dangerous Waste Regulations, or regulated by the U.S. Environmental Protection Agency (EPA) Toxic Substances Control Act.[3]

In addition to the program for response to and mitigation of emergencies, this plan also provides direction on the activities necessary to ensure emergency preparedness on the Hanford Site such as training, drills, exercises, and evaluations. The authority and responsibility for interfaces with offsite organizations responsible for protecting the public and the environment, including those agencies that may provide or request support in the event of an emergency, is also delineated.

The RL responsibility to provide, upon request, radiological advice and assistance to other Federal, tribal, state, or local governments under the Radiological Assistance Program (RAP) is defined in DOE/RL-92-49, *U.S. Department of Energy Radiological Assistance Program Response Plan Region 8.*

1.3 CONCEPT OF OPERATION

An integrated and comprehensive Hanford Site emergency management program has been developed to ensure that:

- the site can respond effectively and efficiently to emergencies so that appropriate response measures are taken to protect workers, the public, the environment, and the national security;
- emergencies are promptly recognized, categorized, and classified, and parameters associated with the emergency are monitored to detect changed or degraded conditions;
- emergencies are reported and notifications are made; and
- reentry activities are properly and safely accomplished, and recovery and post-emergency activities commence properly.

1.3.1 Hanford Site Emergency Management Program Elements

There are five elements of the Hanford Site emergency management program. These elements are:

- emergency **planning** which includes identification of hazards and threats, hazard mitigation, development and preparation of emergency plans and procedures, and identification of personnel and resources needed for an effective response;
- emergency **preparedness** which includes acquisition and maintenance of resources, training, drills, and exercises;
- emergency **response** which includes the application of resources to mitigate consequences to workers, the public, the environment, and the national security, and the initiation of recovery from an emergency;
- **recovery** which includes planning for and taking actions following termination of the emergency to return the facility/operations to normal; and

[3] Permit requirement: Subsection 1.2 (second bullet, fourth dash), Class 1 Modification 9/30/99

- **readiness assurance** which includes assessments and documentation to ensure that stated emergency capabilities are sufficient to implement emergency plans.

1.3.2 Hanford Site Emergency Management Program Basis

The comprehensive Hanford Site emergency management program is based on and commensurate with the hazards and consequences associated with facilities and activities on the site (i.e., developed consistent with a graded approach); offsite facilities that may impact the site; and onsite and offsite RL/ORP/PNSO transportation emergency preparedness activities involving radiological and nonradiological hazardous materials.

1.3.2.1 Operational Emergency Base Program. Each site facility (general purpose, low-hazards, and hazardous) shall have an Operational Emergency Base Program that establishes a minimum set of generic requirements and provides the framework for response to serious events involving health and safety, the environment, safeguards, and security. These events are not unique to DOE operations.

The Operational Emergency Base Program shall provide for compliance with applicable regulations and plans developed by other Federal agencies and DOE offices, and with those state and local planning and preparedness requirements that apply in accordance with DOE O 151.1C.

Additionally, the Operational Emergency Base Program shall provide for integrated planning to meet the response requirements identified in the hazards survey. Hazards surveys are discussed further in subsection 1.3.3.1. Response requirements may include, but are not be limited to, emergency response organization, emergency categorization, notifications and communications, protective actions, emergency equipment, and training and drills. Each of these requirements is discussed in subsequent sections of this plan.

1.3.2.2 Operational Emergency Hazardous Material Program. The Operational Emergency Hazardous Material Program adds to the Operational Emergency Base Program. Depending on the findings of the hazards survey, site facilities may be required to establish and maintain a quantitative emergency planning hazards assessment (EPHA). The EPHA will be used to define the provisions of the Operational Emergency Hazardous Material Program to ensure the program is commensurate with the hazards identified. Such EPHAs are required if the hazard survey identifies hazardous materials exceeding the radiological and/or chemical threshold quantities established by DOE. The results of this assessment provide the technical basis for establishing a graded approach that will meet the program requirements. The Operational Emergency Hazardous Material Program shall be adjusted to be commensurate with hazards that remain after a decontamination and decommission action is completed at each facility/activity.

The extent of planning and preparedness directly corresponds to the type and scope of hazards present and the potential consequences of events. EPHAs prepared for Hanford Site hazardous facilities include identification of hazards and targets unique to a facility, analysis of potential events, and evaluation of potential event consequences. EPHAs are discussed further in subsection 1.3.3.3.

Using the accident scenarios and consequences identified in a facility EPHA, the observable methods of detecting or recognizing an emergency can be identified. These indicators, called emergency action levels (EALs), are used to determine the emergency classification. The emergency classification is used to trigger specified, preplanned responses and protective actions.

Emergency classification and EALs are described further in the respective subsections of section 4.0. For each emergency classification there shall be predetermined protective actions necessary to protect onsite personnel as well as recommended actions for the protection of offsite populations.

The Hanford Emergency Response Organization (ERO) shall be formed, trained, and tested to ensure the recognition and classification of emergencies, and the implementation of protective actions. Recognition and classification of emergencies and protective action implementation is described further in subsequent sections of this plan.

1.3.2.3 Hanford Transportation Emergency Preparedness Program. The Hanford Transportation Emergency Preparedness Program provides the framework for response to onsite and offsite transportation incidents involving radiological and nonradiological hazardous material.

For transportation planning purposes, shipments transported on roadways north of the site's Wye Barricade are not considered "in commerce" under the U.S. Department of Transportation (DOT) regulations found in 49 CFR. Shipments transported south of the Wye Barricade are considered "in commerce" under DOT regulations in 49 CFR, unless public access control is extended south of the Wye Barricade for special case shipments.

For transportation incidents that occur on the site, the Incident Command System is used to mitigate the situation. Upon notification of the event by the Patrol Operations Center (POC), the Hanford Fire Department shall assume incident command responsibilities. The Hanford EOC Shift Office shall have the responsibility for event classification and activation of the Hanford ERO as appropriate.

For transportation incidents involving DOE-owned hazardous materials that occur off the site, emergency contact information shall be provided to first responders in accordance with DOT 49 CFR requirements. The designated emergency contact number shall be the POC, or one of the contractors' staff or their single point-of-contact. The Hanford EOC Shift Office shall have the responsibility for event classification and activation of the Hanford ERO as appropriate.

Figure 1-2 outlines the response approach to a transportation emergency.

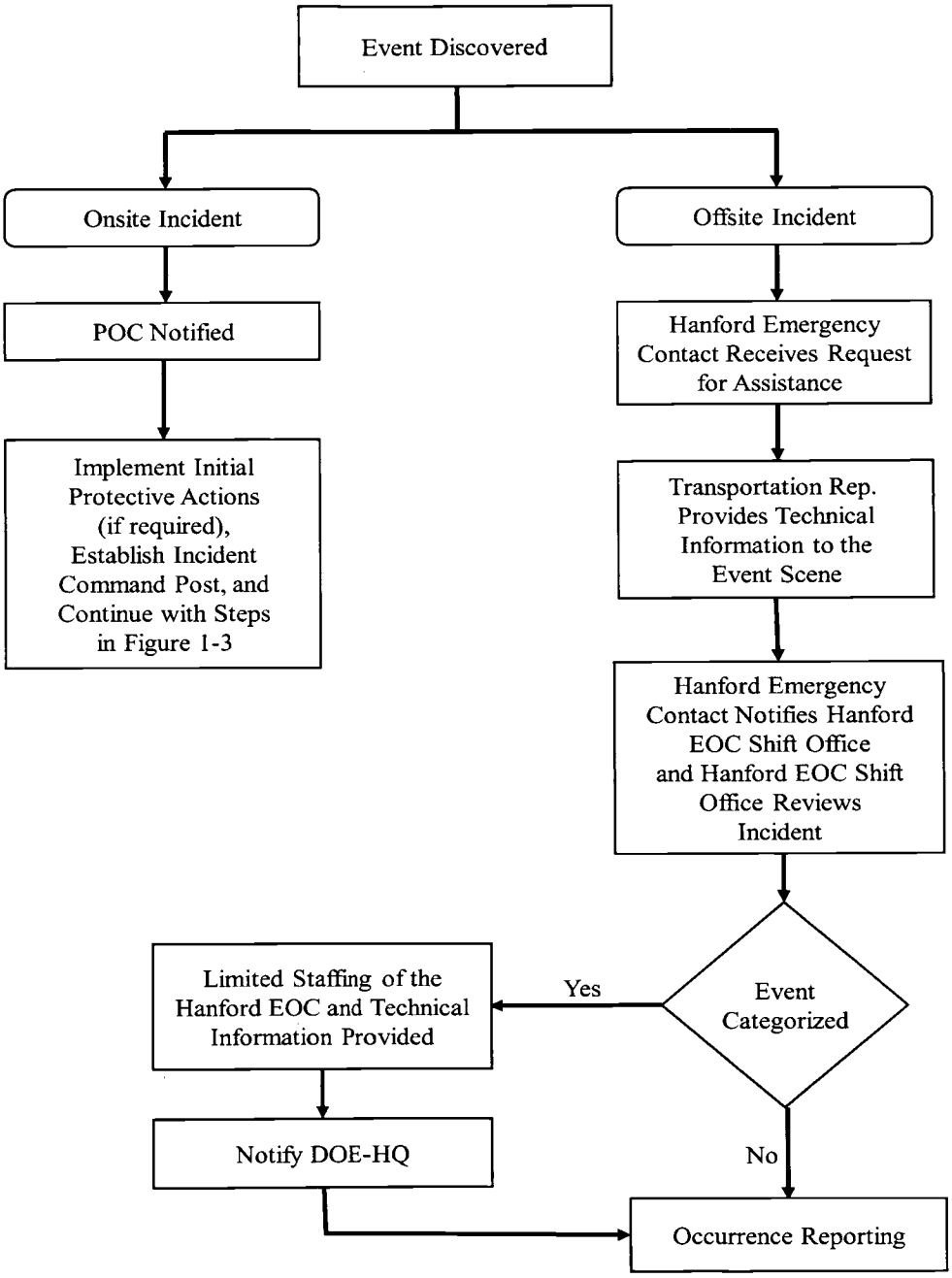
1.3.3 Hazards Survey and Emergency Planning Hazards Assessment

Hazards surveys and EPHAs are used for emergency planning purposes. DOE O 151.1C requires that emergency management efforts begin with the identification of hazards and that the scope and extent of emergency planning and preparedness be commensurate with the hazards. The hazards survey briefly describes the potential impacts of emergency events or conditions and summarizes the planning and preparedness requirements that apply. The EPHA includes the identification and characterization of hazardous materials (radiological and nonradiological) specific to a facility/activity, analyses of potential accidents or events, and evaluation of potential consequences.

1.3.3.1 Hazards Survey Process. A hazards survey (i.e., qualitative examination) shall be prepared to identify the conditions to be addressed by the comprehensive emergency management program. Much of the facility hazards survey should already have been done in the course of meeting other DOE, Federal, and state agency requirements. A hazards survey is an examination of the features and characteristics of the facility or activity to identify the generic emergency events and conditions (including natural phenomena such as earthquakes and tornadoes; wild land fires; and other serious events involving or affecting health and safety, the environment, safeguards, and security at the facility) and the potential impacts of such emergencies.

Figure 1-2

Transportation Emergency Response



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A hazards survey may cover multiple facilities and shall be updated every three years and prior to significant changes to the site/facility or to hazardous material inventories.

Additional information/guidance to assist in the preparation of hazards surveys is delineated in DOE-0223, *Emergency Plan Implementing Procedures*, and applicable sections of the DOE *Emergency Management Guide* (DOE 2007).

1.3.3.2 Emergency Planning Hazards Assessment Process.[4] The release or loss of control of hazardous materials (radiological and nonradiological) shall be quantitatively analyzed. If the results of the analysis indicate the potential for an Alert, Site Area Emergency, or General Emergency, the results of the analysis shall be used to determine the necessary personnel, resources, and equipment for the Hazardous Materials Operational Emergency Program.

If the EPHA indicates that all events would be classified as less than an Alert, an EPHA is not required to be maintained. The results of the hazardous material screening process and the quantitative analysis may be incorporated directly into the hazards survey or may be incorporated by reference in the hazards survey. The minimum program requirements shall encompass the requirements for Hazardous Waste Operations and Emergency Response found in 29 CFR 1910.120 and the Base Program Operational Emergency requirements specified in this plan.

An accurate and timely method for tracking changes in operations processes, or accident analyses that involve hazardous materials (e.g., introduction of new materials, new uses, significant changes in inventories, modifications of material environments) shall be established and maintained for each facility/activity. The method shall allow sufficient time for appropriate facility/activity personnel to review the EPHA and modify plans and procedures, as necessary.

Each facility with hazardous materials (radiological, chemical, biological agents and toxins) in sufficient quantities (radioactive or chemical materials) or representing specific biological agents/toxins, which pose a serious threat to workers, the public, or the environment shall develop and maintain a quantitative EPHA and meet more detailed emergency planning requirements. Hazardous materials are any solid, liquid, or gaseous material that is toxic, flammable, radioactive, infectious, corrosive, chemically reactive or unstable upon prolonged storage in quantities that could pose a threat to life, property, or the environment. While not every conceivable situation will be analyzed, the EPHA will provide the framework for response planning to virtually any declared emergency.

The EPHA shall be reviewed at least every three years and updated prior to significant changes to the facility or hazardous material inventories, and be maintained in accordance with site contractor document control requirements. Changes that result in a reduction of hazards with no adverse effect on safety or emergency preparedness and response may be included in the next scheduled review and update.

In addition, the EPHA shall include a determination of the size of the emergency planning zone (EPZ). The EPZ is the geographic area surrounding the site/facility for which special planning and preparedness actions are taken or need to be taken to reduce or minimize the impact to onsite personnel and public health and safety in the event of a Hazardous Material Operational Emergency. Assumptions, methodology, models, and evaluation techniques used in the EPHA shall be documented.

An EPHA shall be developed for shipments that do not satisfy governing DOT regulations and specifications for commercial hazardous materials transport. However, if a shipment satisfies DOT regulations and specifications, an EPHA is not required.

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[4] Permit requirement: Subsection 1.3.3.2, Class 1 Modification 6/30/14

Additional information/guidance to assist in the development of EPHAs is delineated in DOE-0223, *Emergency Plan Implementing Procedures*, and applicable sections of the DOE *Emergency Management Guide* (DOE 2007).

1.3.4 Hanford Site Emergency Response[5]

This section provides an overview of how the Hanford Site responds to events. It covers the actions to be taken for an event by the event discoverer, the facility staff, and by agencies such as the Hanford Fire Department and/or Hanford Patrol.

Since the Hanford Site has a diverse array of facilities and processes, a graded approach is used to respond to an event depending upon the nature of a facility and/or the severity of the event. There are a number of events to which the site has to be ready to respond, including releases, spills, operational events, fires, natural phenomenon, and security events.

The discoverer of an event (e.g., fire, release, spill, transportation incident, etc.) initiates response to the event that should include implementation of SWIM (**Stop** activities at the scene; **Warn** personnel; **Isolate** the area; **Minimize** exposure to the hazards) to the extent possible. For some events, specific response actions to mitigate the event by the discoverer and/or facility staff may be appropriate. In such cases, actions may include shutting down systems, isolating materials, or performing other facility specific response actions when appropriate. Facility procedures may also direct protective actions for personnel.

In other events, resources outside the facility may be required. In these cases, the general response approach is outlined in Figure 1-3 and requires the discoverer to call the 911 emergency number (or 373-0911 for cellular telephones). Upon being contacted, the 911 emergency center assesses the situation and notifies the primary response agencies – the Hanford Fire Department and Hanford Patrol – that respond and ensure implementation of the Hanford Incident Command System (ICS).

> NOTE: Fire alarm pull boxes and fire sprinkler flow monitoring devices, which are connected to a system monitored by the Hanford Fire Department, and Hanford's general operation two-way radio system (hand-held and vehicle mounted), which is monitored in the 911 emergency center, are also available for summoning emergency response agencies.

The Hanford ICS is an integrated emergency management system with clearly defined responsibilities and communication pathways consistent with the National Incident Management System (NIMS) that provides a graded approach for emergency management based upon the needs of the event. Additionally, the Hanford ICS is designed to support predesignated and trained facility emergency response organization (ERO) members (i.e., Building Emergency Director, Building Warden, etc.) to complete required emergency response activities and to support emergency response agencies in the implementation of incident mitigation strategies.

The senior Hanford Fire Department official becomes the Incident Commander (IC), unless the event is determined to primarily be a security event, in which case the Hanford Fire Department and Hanford Patrol will operate under a unified command system with Hanford Patrol making all decisions pertaining to security.

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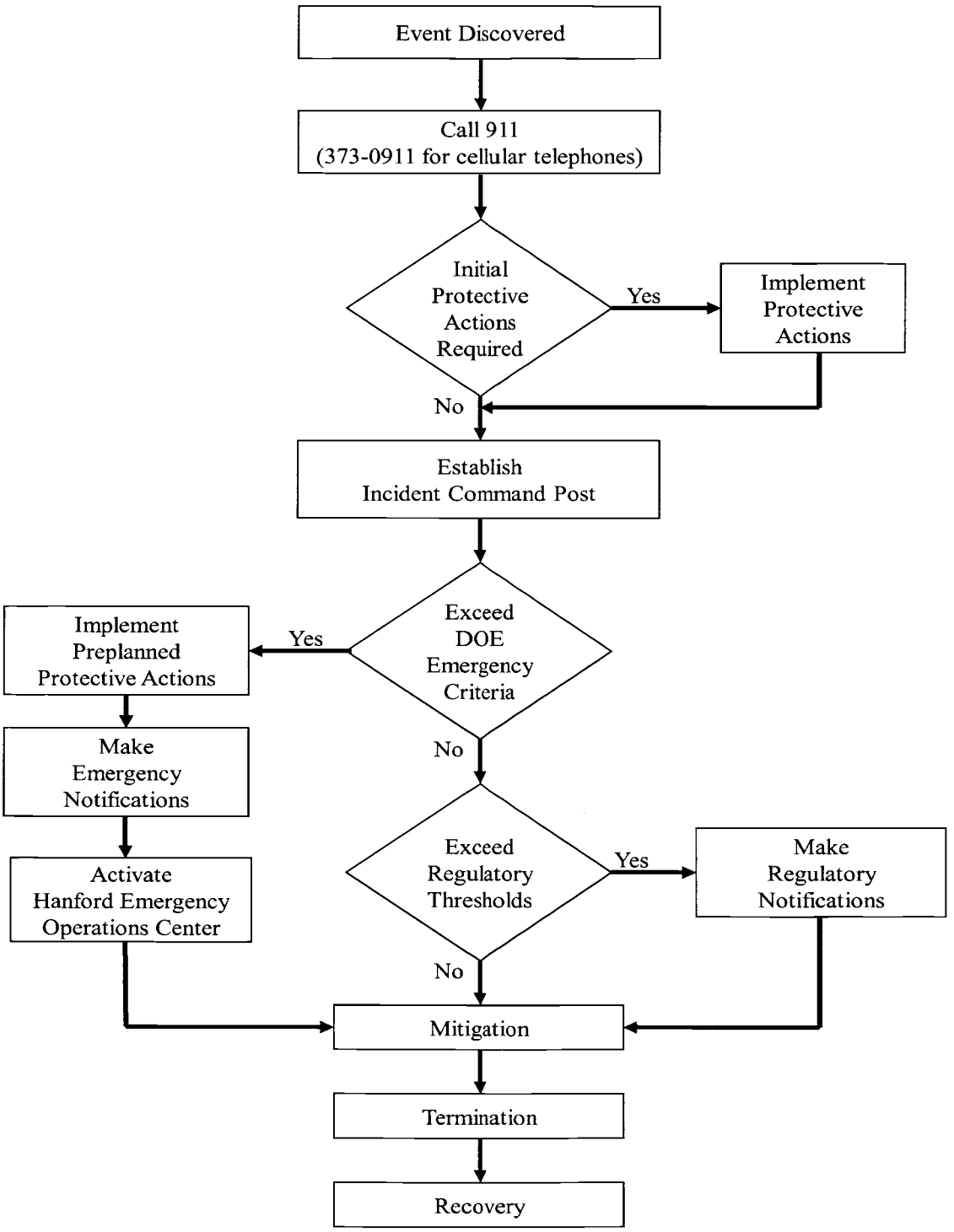
[5] Permit requirement: Subsection 1.3.4, Class 1 Modification 12/31/12

Figure 1-3

Emergency Response



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When the Hanford ICS is established, a coordinated effort to plan and implement additional mitigative activities commences. In addition, the consequences of the event are further analyzed and additional protective actions are implemented through the use of Hanford Site Emergency Alerting System components and barricades if determined necessary.

Whenever there is an event at Hanford, certain notifications are required depending upon the type and severity of the event. These notifications would include management notifications, activation of emergency response personnel, and offsite agency notifications as necessary. These notifications are performed primarily by the Hanford EOC Shift Office and site contractor environmental single points-of-contact. For events that do not meet emergency criteria but could cause public concern or media interest, local and state emergency management agencies are notified as well as state regulatory agencies for information purposes. If the event exceeds regulatory criteria, the appropriate regulatory agencies are notified immediately.

Concurrent with the immediate notifications to the appropriate regulatory agencies, if the event is severe enough to be classified as an Alert, Site Area Emergency, or General Emergency, state and county agencies are notified within 15 minutes of declaration of the emergency. This notification allows the agencies to implement protective actions for their populations if necessary, and to begin mobilization of resources. In addition, preplanned protective actions are implemented for site personnel and the Hanford EOC is activated to support the Incident Command Organization and coordinate interface with offsite agencies.

Upon mitigation of the event to the point the situation is stabilized and ensuring that actions have been taken to prevent reoccurrence, the event is terminated and the recovery effort begins. Recovery is the process of planning for and implementing actions to return the facility/process to pre-event conditions. Actions could include activities such as equipment repair, decontamination, proper storage of waste generated, and providing any follow-up reporting to appropriate regulatory agencies.

1.4 SITE DESCRIPTION

1.4.1 Site Description Overview

The 1,517 square kilometer (586 square mile) Hanford Site was originally acquired by the Federal government in 1943 for the construction and operation of facilities to produce plutonium that was used to help end the Second World War. In 1989, the Hanford Site mission changed from one of national defense production to waste management, environmental restoration, and technology development.

Hanford Site contractors operate/manage facilities and provide site services for RL/ORP/PNSO. The site contains several types of complex facilities, including retired nuclear reactors, retired and active chemical processing facilities, nuclear waste storage tanks, and research laboratories. There are approximately 1,500 buildings (occupied and unoccupied) on the site with an infrastructure of utilities and transportation necessary to support an operation employing approximately 15,000 workers.

The Hanford Site is also defined as a single *Resource Conservation and Recovery Act of 1976* facility, identified by the EPA/State Identification Number WA7890008967, that consists of over 60 TSD units. This area consists of the contiguous portion of the Hanford Site that contains these TSD units and, for the purposes of the RCRA, is owned and operated by the U.S. Department of Energy (excluding lands north and east of the Columbia River, river islands, lands owned or used by the Bonneville Power Administration, lands leased to Energy Northwest, and lands owned by or leased to the state of Washington).

1.4.1.1 Hanford Site Facilities/Activities. The major facilities and activities on the Hanford Site, that are DOE-owned and contractor-operated, are grouped together in the following major areas.

- 100 Areas: These areas are located along the Columbia River in the northern portion of the Hanford Site and contain nine former plutonium production reactors. The facilities in the 100 Areas are currently being prepared for permanent disposal.
- 200 East and 200 West Areas: These areas lie on a plateau near the center of the site some 40 kilometers (25 miles) north of Richland, Washington, and are dedicated to waste management and treatment activities, laboratory support, waste characterization, and environmental restoration.
- 300 Area: This area is approximately 8 kilometers (5 miles) north of Richland, Washington. Major activities include nuclear research and development.
- 400 Area: This area, approximately 15 kilometers (9 miles) north of Richland, Washington, contains the Fast Flux Test Facility (currently in decontamination and decommissioning process) and related support facilities formerly involved in the liquid metal reactor program.
- 600 Area: This area includes all of the Hanford Site not occupied by the other listed areas. Land uses include the 310-square-kilometer (120-square-mile) Fitzner/Eberhardt Arid Lands Ecology Reserve, the Environmental Restoration Disposal Facility (ERDF), and a U.S. Fish and Wildlife Refuge.

The site also contains several major and minor operations that are not DOE-owned/contractor operated. The major operations include the following.

- A publicly-owned commercial nuclear power plant, Columbia Generating Station, operated by Energy Northwest on land leased from the Federal government on the eastern side of the site, near the Columbia River and about 15 kilometers (9 miles) north of Richland.
- A low-level radioactive waste disposal site located near the 200 Areas, on land that the state of Washington has leased from the Federal government. This facility is commercially operated by the US Ecology Company in accordance with state and Federal licenses and permits.
- A commercial incubator project, administered by the Port of Benton, which will lease up to 22 excess site buildings adjacent to the 400 Area for private-sector businesses.
- An observatory to monitor the earth's gravitational waves, Laser Interferometer Gravitational Observatory (LIGO), located in the northern part of the 600 Area.

RL/ORP/PNSO and site contractors also own or lease site-related office and warehouse facilities off the Hanford Site in the city of Richland. These facilities cannot generate an Alert or higher emergency.

1.4.1.2 Hazards. Activities at the Hanford Site involve both radiological and nonradiological hazardous materials. Major hazardous materials emergencies are associated with the potential for fire, explosion, or dispersion of radiological or toxic chemicals.

A significant hazard requiring emergency planning on the Hanford Site stems from the presence of large quantities of radioactive materials from the various separations, waste storage, research, and previous production and manufacturing materials. These materials, although contained, could affect worker and public health and the environment in the event of dispersion during a major accident.

In addition, large quantities of various nonradiological hazardous materials are stored and used in chemical processing and other operations at the Hanford Site. Hazardous materials are routinely transported by truck and rail to and around the site and are stored at various onsite locations. State Route 240, a main public highway that runs through the site, is used for transporting a wide range of chemicals, including agricultural chemicals to farms and orchards in the surrounding area.

Typically, hazardous materials of concern for emergency planning purposes include petrochemicals, explosives, toxic chemicals and chemical products, and fuel gases (e.g., propane and butane). Hazardous chemicals of particular concern are gases such as chlorine that have the potential to form large, toxic airborne clouds that may travel long distances before dispersing.

For purposes of emergency planning, facilities on the Hanford Site are described as general purpose, low-hazards, or hazardous. The DOE O 151.1C Operational Emergency Base Program applies to general purpose, low-hazards, and hazardous facilities. The Operational Emergency Hazardous Material Program adds to the Operational Emergency Base Program and applies only to hazardous facilities.

1.4.1.3 Contractors. The major Hanford Site contractors, responsible in their respective capacities for the operation or management of the Federal facilities, include the following.

- Mission Support Alliance, LLC. (MSA). Under contract with RL, MSA manages the Mission Support Contract that provides infrastructure and site services. The scope of the contract includes five primary functions: Safety, Security and Environment; Site Infrastructure and Utilities; Site Business Management; Information Resources/Content Management; and Portfolio Management.

- CH2M HILL Plateau Remediation Company (CHPRC). Under contract with RL, CHPRC manages the Plateau Remediation Contract to clean up and restore the environment to protect the Columbia River. Activities include completion of the Plutonium Finishing Plant project; characterization of facilities and waste sites; disposal activities related to non-tank farm waste; environmental surveillance and maintenance; groundwater monitoring and remediation; environmental remediation; and development of documents for regulatory and other decisions covering groundwater, soil, and facilities.

- Washington Closure Hanford, Inc. (WCH). Under contract with RL, WCH manages the River Corridor Closure Contract to clean up and take down excess facilities, remediate waste sites and burial grounds, and place deactivated plutonium production reactors into a safe and stable condition.

- HPM Corporation Occupational Medical Services (HPMC). Under contract with RL, HPMC provides occupational health services to Hanford Site employees.

- Washington River Protection *Solutions* (WRPS), LLC. Under contract with ORP, WRPS manages the Tank Operations Contract to store, retrieve and, treat radioactive tank waste and close the tank farms.

- Advanced Technologies and Laboratories International, Inc. (ATL). Under contract with ORP, ATL manages the Analytical Services Production Contract and performs routine analytical chemistry services in support of the Hanford Site cleanup.

- Bechtel National, Inc. (BNI). Under contract with ORP, BNI manages the Waste Treatment Plant Project to design, build, and start up waste treatment facilities that will transform liquid radioactive waste, currently stored in underground tanks, into a stable glass waste form through a process known as vitrification.

- Pacific Northwest National Laboratory (PNNL). Under contract with PNSO, PNNL occupies some Hanford Site 300 Area buildings to conduct research and development. PNNL also performs Unified Dose Assessment Center (UDAC) activities for RL.

1.4.2 Physical Attributes of the Hanford Site

The Hanford Site is located in the southeastern area of the state of Washington. The site covers approximately 1,517 square kilometers (586 square miles) located in Benton, Franklin, and Grant Counties just northwest of the cities of Richland, Kennewick, and Pasco (Tri-Cities).

For emergency preparedness purposes, the Hanford Site is defined as the near (south and west) bank of the Columbia River from the intersection of the existing western most site boundary and the Columbia River, following the Columbia River to the south boundary of the 300 Area, and proceeding west and north along the existing site boundary (see Figure 1-4). Based on this definition, portions of the existing Hanford Site that fall within Grant and Franklin Counties are considered outside of the site boundary.

The Columbia River runs across the northern half of the site then flows south across the eastern side of the site. The Yakima River borders part of the southern boundary of the site and joins the Columbia River below the city of Richland. A worst-case flood of the Columbia River or catastrophic breach of Grand Coulee Dam could impact parts of the 100 and 300 Areas but the central portion of the site would remain unaffected.

The Hanford Site and surrounding area has a semiarid climate with a sparse covering of vegetation. The terrain of the central and eastern parts of the site is relatively flat. Rattlesnake Mountain, the Yakima Ridge, and the Umtanum Ridge continue onto the site from the west and form the southwestern and western boundary. Two small ridges, Gable Butte and Gable Mountain, rise above the plateau on the central part of the site. It is an area of low seismicity in which moderate-level earthquakes can occur.

The area has moderate winters and hot summers. Severe thunderstorms are rare, although the site is vulnerable to lightning strikes causing wildland fires. Formation of a severe tornado is highly unlikely.

Primary land uses of the surrounding areas are irrigated and nonirrigated farming, residential living, and state- and Federal-controlled lands.

Because of the size of the site, there may be differences in the specific physical attributes in the vicinity of each hazardous facility. Detailed discussions and analysis of the local geography, geology, seismology, meteorology, and hydrology in the area of each hazardous facility are contained in safety analysis reports.

1.4.2.1 Population Diversity. The permanent population within the 50-mile (80-kilometer) site ingestion exposure EPZ (Figure 1-5), which is centered on Energy Northwest's Columbia Generating Station, is approximately 270,000. The maximum transient population within the ingestion EPZ, including Hanford Site workers, offsite workers, and recreationists, is approximately 17,000.

The plume EPZ population diversities for Hanford Site EPZs are as follows.

- 100K Area: A small portion of a sparsely populated area of southern Grant County consisting of a permanent population, a transient population of seasonal employees, and no special populations.

- 200W Area: A small portion of a sparsely populated area of northwestern Benton County and southern Grant County consisting of a permanent population, a transient population of seasonal employees, and no special populations.

- 300 Area: A portion of western Franklin County consisting of a permanent population, a transient population of seasonal employees, and no special populations. Also, a portion of the northern section of the city of Richland consisting of a permanent population, a transient population of seasonal employees, and special populations consisting of four schools and three pre-schools.

During the summer months, recreationists may be using the section of the Columbia River between Richland and Vernita.

Plume and ingestion EPZs are discussed further in subsection 7.1. Figure 7-1 depicts the EPZs for each site geographical areas with potential offsite consequences.

1.4.2.2 Transportation System. Hundreds of miles of roads are maintained on the Hanford Site. State Routes 240 and 24 and site roads are used by many types of vehicles including commercial trucks and private vehicles.

A 26-kilometer (16-mile) stretch of the southern portion of the site's 169-kilometer (105-mile) railroad system has been transferred to the Port of Benton. Portions of the remaining railroad lines are used occasionally.

The Richland Airport, nearest to the Hanford Site, is a small, general utility airport. The Tri-Cities Airport (in Pasco) is used by regional carriers.

The section of the Columbia River that flows near the Hanford Site is used mainly by recreationists. Barge traffic does not operate on the stretch of the river that goes through the site.

Figure 1-4

Hanford Site Map

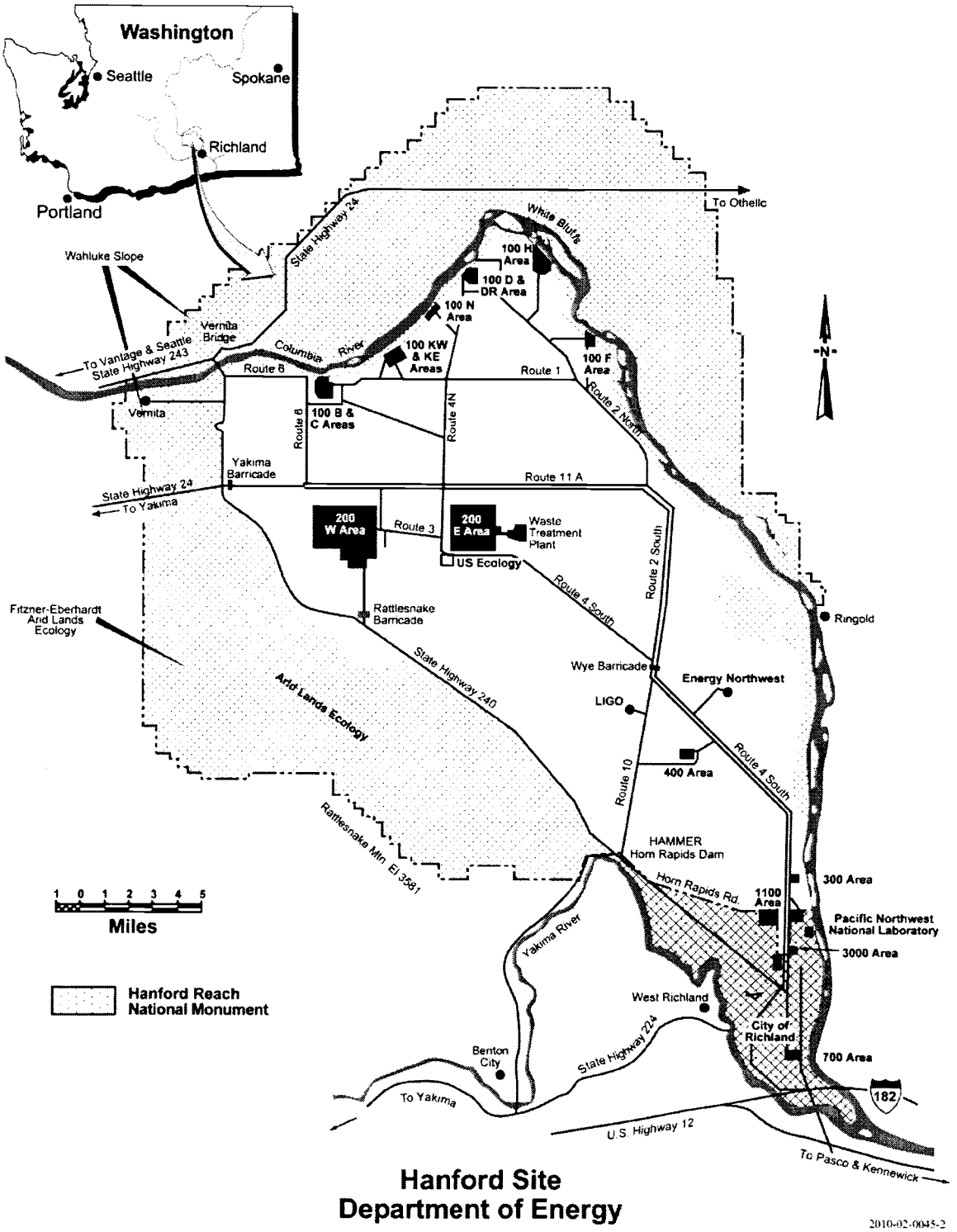
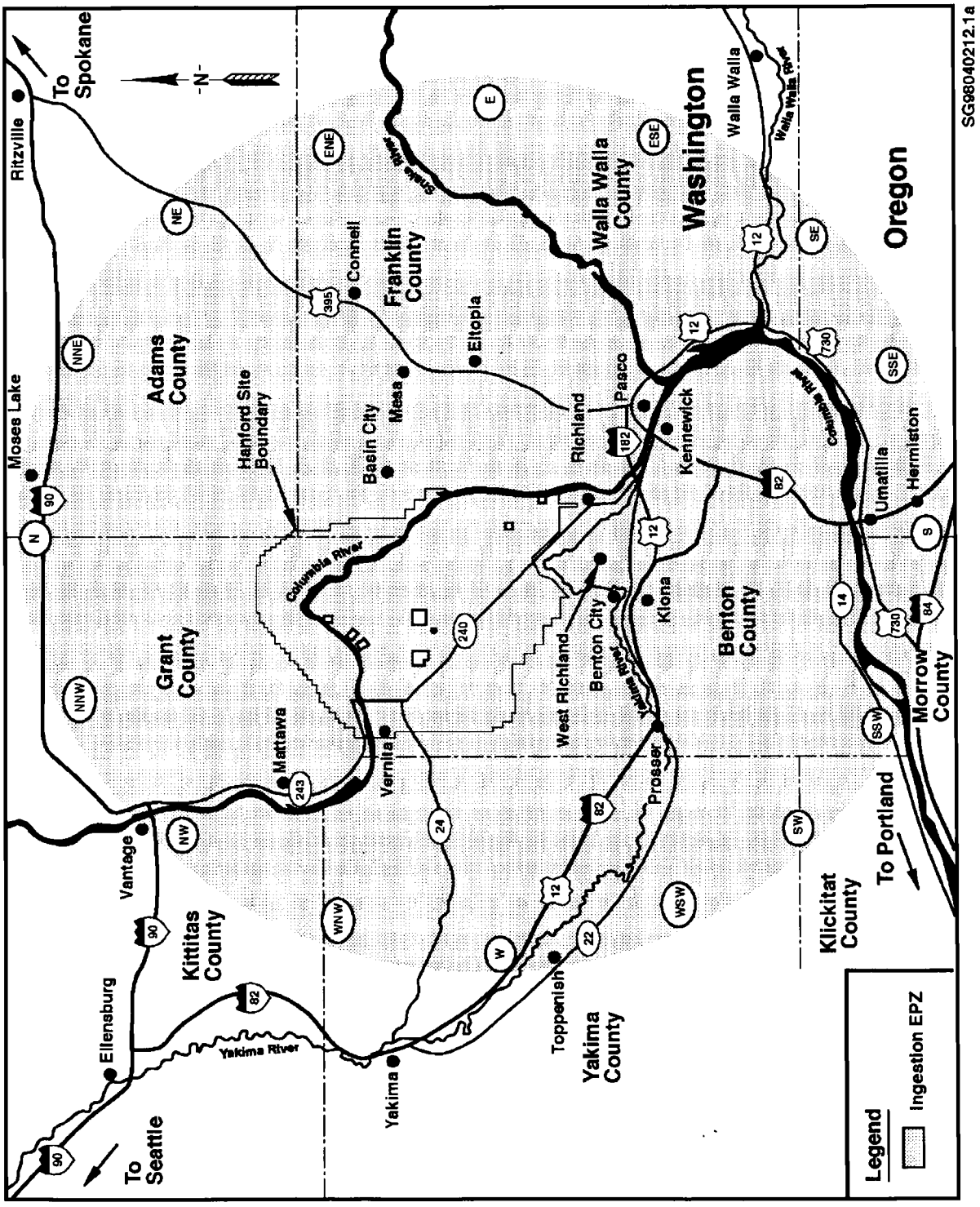


Figure 1-5

Ingestion Exposure Emergency Planning Zone



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2.0 EMERGENCY RESPONSE ORGANIZATION (INTERNAL)

The mission of the Hanford Site ERO is to ensure that, in the event of an emergency, actions will be taken to prevent or minimize impacts to workers, the public, site, facilities, and the environment. The Hanford Site ERO shall be structured and staffed with an adequate number of experienced and trained personnel, including designated alternates, available on demand for timely and effective performance of ERO functions. Hanford facilities and response organizations such as the Hanford Fire Department are governed by the standards and regulations of the National Fire Protection Association (NFPA) and Code of Federal Regulations, as well as the Washington Administrative Code and Revised Code of Washington for emergency response, training, and on-scene emergency management.

2.1 U.S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE, OFFICE OF RIVER PROTECTION, PACIFIC NORTHWEST SITE OFFICE, AND HANFORD SITE CONTRACTOR ROLES AND RESPONSIBILITIES

2.1.1 Hanford Site Contractors

Hanford Site contractors with responsibilities for facility operations/activities or for providing site services shall coordinate with one another and participate in the development and maintenance of a comprehensive Hanford Site emergency management program that meets the mission of the Hanford Site ERO. Such programs shall contribute to DOE's comprehensive Emergency Management System by promoting effective and efficient integration of applicable requirements, including those promulgated by other agencies.

2.1.1.1 Event Contractor. The site contractor that maintains responsibility for the facility or activity with the emergency is designated as the event contractor. The event contractor responsibilities include:

- prompt and accurate categorizing of occurrences in accordance with this plan and DOE O 232.2, *Occurrence Reporting and Processing of Operations Information*;
- initially classifying the emergency, if warranted;
- assisting, as necessary, in mitigating the emergency situation;
- initiating actions to protect workers within their geographic area of responsibility;
- contacting the POC and providing initial emergency information;
- requesting support from nonevent site contractors as necessary;
- establishing an initial command post and, as appropriate, assigning other Incident Command Organization functions as delineated in Table 2-1, and other supporting entities such as radiological control technicians and industrial hygienists as available;
- arranging for employer notification (if not an event contractor employee), decontamination, and transport of a contaminated corpse;
- providing personnel to staff the Hanford EOC to include management and technical staff;
- providing event status information to the Hanford EOC;
- ensuring proper cleanup, transportation, and storage of hazardous materials generated as a result of the event; and
- providing funding for performance of emergency response and recovery duties and replacement of supplies used by other contractors for event response.

Other site contractors shall provide support to the event contractor for actions related to the services they provide on the site, such as notifications, fire, security, or medical services.

Table 2-1

Incident Command Organization Functions

FUNCTION	RESPONSIBLE STAFFING
Incident Commander	Hanford Fire Department[1]
Building Emergency Director/Building Warden	Affected facility
EOC Liaison Officer	MSA or appropriate contractor personnel
Safety Officer	Hanford Fire Department
Incident Command Post (ICP) Communicator	Affected hazardous facility
ICP Hazards Communicator	Affected hazardous facility
Facility Operations Specialists	Affected facility
Operations Section Chief	Hanford Fire Department/Hanford Patrol
Radiological Hazards Assessor	Affected facility radiological control manager (or equivalent)
Chemical Hazards Assessor	Hanford Fire Department, on-call industrial hygienist, or affected facility
Planning Section Chief	Hanford Fire Department
Logistics Section Chief	Hanford Fire Department
Resource Staging Area Manager	Hanford Fire Department
Facility Staging Area Manager	Affected facility

[1]During security events, the Hanford Fire Department and Hanford Patrol will operate under a unified command system with Hanford Patrol making decisions pertaining to security.

2.1.1.2 Mission Support Alliance, LLC. In addition to event contractor responsibilities for the Hanford Site facilities it operates, MSA emergency responsibilities include:

- fire suppression, emergency rescue, emergency medical, hazardous materials response, fire protection services, and incident response provided by the Hanford Fire Department;
- site security, access control, emergency service call answering and dispatching, and transportation emergency response contact provided through the Hanford Patrol;
- emergency communications including onsite and offsite notifications provided by the Hanford EOC Shift Office;
- staffing of a 24-hour Emergency Duty Officer (EDO) position;

- managing and ensuring that the Hanford EOC is staffed with qualified personnel;
- providing personnel to staff the Hanford EOC to include management and technical staff;
- onsite and offsite radiation monitoring and sampling;
- weather information from the Hanford Site meteorology station;
- transportation (e.g., motor carrier services, crane and rigging) and heavy equipment operations;
- services in support of reentry and recovery operations, such as decontamination, engineering, equipment maintenance, utilities, procurement, and waste disposal;
- radio, telecommunications, computer, and audio/visual services;
- evaluation of radiological doses to personnel in the event of a criticality emergency; and
- managing site-wide radiological tasks which includes plume assessment and tracking; large group personnel survey, sort, and decontamination; survey of individuals evacuated from the Columbia River (if requested); and radiological control support during medical care of radiation accident patients at the local hospitals.

2.1.1.3 CH2M HILL Plateau Remediation Company. In addition to event contractor responsibilities for the Hanford Site facilities it manages, CHPRC emergency responsibilities include:

- providing personnel to staff the Hanford EOC to include management and technical staff;
- radiological control technician support; and
- health technician support.

2.1.1.4 Washington Closure Hanford, Inc. In addition to event contractor responsibilities for the Hanford Site facilities it manages, WCH emergency responsibilities include:

- providing personnel to staff the Hanford EOC to include management and technical staff; and
- radiological control technician support.

2.1.1.5 HPM Corporation Occupational Medical Services. HPMC has no event contractor responsibilities as delineated in subsection 2.1.1.1. However, emergency services provided by HPMC include:

- minor emergency medical care and consultation;
- medical support for chemically, biologically, and radiologically contaminated patients;
- hostage negotiation and critical stress debriefing support;
- coordination with and support to community medical services;
- providing personnel to staff the Hanford EOC to include management and technical staff; and
- support to the Hanford Fire Department in the event of a large-scale mass casualty event on the Hanford Site as requested.

2.1.1.6 Washington River Protection *Solutions*, LLC. In addition to event contractor responsibilities for the Hanford Site facilities it manages, WRPS emergency responsibilities include:

- providing personnel to staff the Hanford EOC to include management and technical staff;
- radiological control technician support; and
- health technician support.

2.1.1.7 Advanced Technologies and Laboratories, Inc. ATL emergency responsibilities include:

- providing personnel to staff the Hanford EOC to include management and technical staff; and
- laboratory services.

2.1.1.8 Pacific Northwest National Laboratory. In addition to event contractor responsibilities for the Hanford Site facilities it operates, PNNL emergency responsibilities include:

- health physics technical support; and
- providing personnel to staff the Hanford EOC to include management and technical staff.

2.1.2 U.S. Department of Energy, Richland Operations Office, Office of River Protection, and Pacific Northwest Site Office

RL/ORP/PNSO shall have a trained emergency response staff and shall provide facilities/activities under their cognizance with:

- direction to implement emergency management policy and requirements;
- direction in emergency planning and preparedness activities;
- support and assistance (e.g., legal, financial, procurement, engineering, human resources) during emergencies; and
- support and assistance in resolving issues in site/facility/activity emergency management programs, as well as assessments of site/facility/activity emergency management programs.

2.1.2.1 RL/ORP Manager. The RL and ORP Managers shall designate additional senior management personnel to hold the Emergency Manager position with decision-making responsibilities. The first responding Emergency Manager will fill the position until an Emergency Manager from the responsible DOE Office (i.e., RL or ORP) is able to assume the role. If the event occurs at a PNNL occupied facility a PNSO senior manager will act as advisor to the Emergency Manager.

The Emergency Manager has the ultimate responsibility and authority for Hanford Site emergency response activities to ensure that effective management is provided for response to emergencies and is further responsible for overseeing the performance of onsite activities necessary to place the site in a safe condition and to minimize or terminate uncontrolled releases of hazardous materials, and for interfacing with offsite agencies and the public.

The Emergency Manager shall be supported by personnel with communications, technical, and liaison and public affairs expertise and shall ensure fulfillment of his or her responsibilities through direction of the Policy Team and representatives assigned to offsite emergency centers. The functions of the Policy Team are described in subsection 2.2.2.1.

2.1.2.2 RL/ORP/PNSO Personnel. RL/ORP/PNSO personnel shall fill ERO positions that include:

- members of the Policy Team, Site Management Team (SMT), and Joint Information Center (JIC);
- representatives to state emergency centers; and
- representatives to DOE-Headquarters (HQ), as requested.

2.1.2.3 DOE Facility Representative. The DOE Facility Representative serves in an oversight and liaison capacity at the ICP during declared emergencies. The primary function of the DOE Facility Representative is to observe ICP activities and, if required, report problems about facility conditions, event status, or mitigative actions to the Facility Representative Liaison in the Hanford EOC.

2.2 EMERGENCY RESPONSE ORGANIZATION STRUCTURE[1]

The Hanford Site ERO has two distinct components – the Incident Command Organization and the Hanford EOC – each with emergency direction and control responsibilities.

The Incident Command Organization consists of the NIMS ICS positions made up of site contractor emergency response personnel (i.e., Hanford Fire Department, Hanford Patrol) with the responsibility for on-scene mitigation (including emergency medical response, search and rescue operations, fire operations, hazardous material emergency response operations, and security related activities); and the facility/building ERO with responsibility for implementing emergency response activities at the event facility.

The facility/building ERO is responsible for completing specific emergency response activities associated with facility emergencies. For low-hazards and hazardous facilities with a Building Emergency Director (BED) or Building Warden (BW) on the premise at the time of the incident, the BED/BW shall be responsible for implementing emergency mitigation activities identified in appropriate emergency response procedures (e.g., protective actions, event classification, notification).

However, if events require actions performed by Hanford Site emergency response agencies (i.e., Hanford Fire Department, Hanford Patrol), the Hanford Incident Command System is activated. Upon arrival of the IC, the BED/BW, with support from the facility/building ERO, becomes part of a consolidated Incident Command Organization. The BED/BW shall retain responsibility for direct configuration control over facility systems and components; while the IC assumes the overall management strategy associated with the incident and ensures that appropriate ICS positions are staffed and working cohesively towards mitigation of the incident.

If the BED/BW is not present at the low-hazards or hazardous facility at the time of an incident (e.g., during off shift hours), the IC shall perform the duties of the BED/BW in addition to his/her own duties. The respective on-call BED/BW shall be summoned to the scene based upon the BED/BW listing located in the POC or PNNL Control Room.

If necessary, the BED/BW will make the classification decision (i.e., Alert, Site Area Emergency, or General Emergency) and determine if the RCRA contingency plan implementation requirements have been met prior to responding to the scene. If the on-call BED/BW is not available and timely classification is necessary, the IC may direct the Hanford EOC Shift Office Duty Officer to make the classification decision and determine if the RCRA contingency plan implementation requirements have been met. Upon arrival of the BED/BW at the scene, the IC will turn over the remaining BED/BW duties.

[1] Permit requirement: Subsection 2.2, Class 1 Modification 12/31/12

The Hanford EOC fills the role identified in the NIMS as the Multiagency Coordination (MAC) group to coordinate activities above the event scene and to prioritize the incident demands for critical or competing resources, thereby assisting the coordination of the operations at the event scene. Responsibilities include monitoring and providing support for the onsite response, assisting with issue resolution, assessing the offsite impacts, and interfacing with offsite agencies and the public.

The Hanford EOC is depicted in Figure 2-1 and the Incident Command Organization is depicted in Figure 2-2. Both components of the Hanford ERO are further delineated in the respective subsections below.

For nonfacility events (e.g., onsite transportation incidents, wildland fires), the IC shall be responsible for coordinating and performing the response activities. The Hanford EOC Shift Office shall have the responsibility for further classifying the event (i.e., as an Alert, Site Area Emergency, or General Emergency) and ensuring that the RCRA contingency plan implementation requirements have been met in accordance with subsection 4.2, if warranted. After the immediate threat of a release has been stabilized or eliminated, remaining duties will be delegated from the IC to the organization that offered the hazardous substance for transportation.

In all events, the Incident Command Organization shall have the authority to commit the resources needed to carry out the emergency response; and be thoroughly familiar with applicable plans and procedures, operations and activities at the facility, location and properties of all wastes handled, location of all records within the facility, and the layout of the facility.

2.2.1 Incident Command Organization

The Hanford ICS provides a graduated response mechanism for unusual conditions and emergencies on the Hanford Site.

Depending on the severity of the event, the Incident Command Organization is comprised of two main groups — site contractor emergency response personnel (i.e., Hanford Fire Department, Hanford Patrol) and the facility/building ERO with responsibility for implementing emergency response activities at the event. Other emergency response support personnel may be called upon to assist in the mitigation of an event depending on the type of emergency, but are not considered part of the Hanford ERO. The appropriate personnel from each group may be located at either the event scene or ICP, or staging area. A description of each group, including roles and responsibilities, is provided in the following subsections.

Facility personnel may be able to mitigate the event using facility abnormal event or emergency procedures and facility or process personnel as deemed necessary by the BED or BW. In these instances, the BED or BW coordinates emergency response efforts at the scene to include oversight of mitigation efforts, use of appropriate personal protective equipment, facility protective actions, and relevant notifications. Examples of such events that do not require assistance from outside the facility (termed incidental responses) include small releases of known substances when mitigation can be accomplished by trained on-scene personnel, minor first aid cases, noninjury contamination incidents, and nonemergency plant responses.

If event conditions exceed the capabilities or resources of the affected facility or require protective actions beyond the event scene hazard area, the Hanford ICS enables the use of additional site contractor emergency response personnel to mitigate the event. Requests for such additional site contractor emergency response personnel are made to the POC via the 911 emergency number (373-0911 for cellular telephones) and, where applicable, automated alarm systems.

Figure 2-1

Hanford Emergency Operations Center

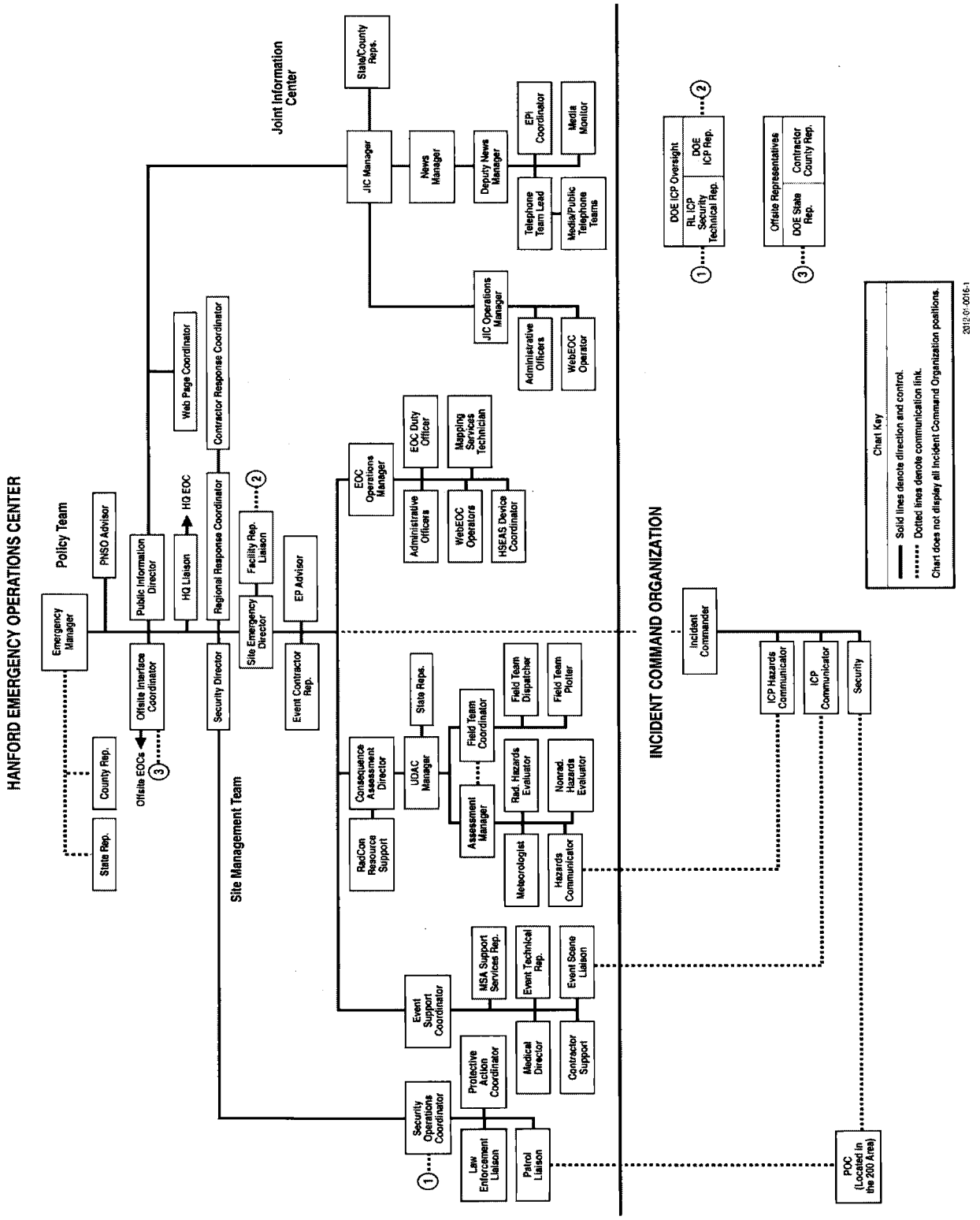
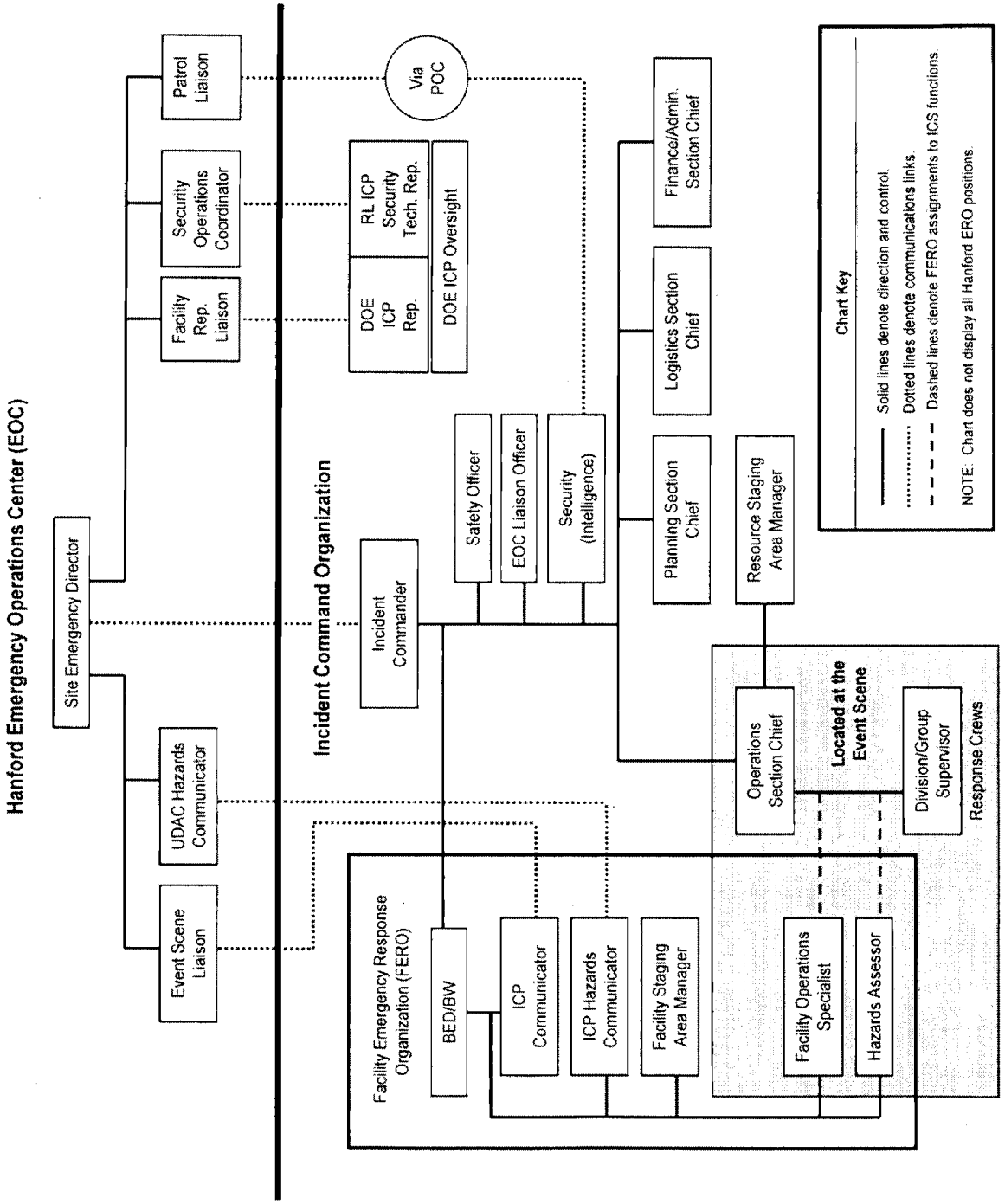


Figure 2-2

Incident Command Organization



This level of response requires the designation of an IC. The IC is responsible for the overall management strategy and for ensuring that all incident scene actions are coordinated and conducted safely. The IC will make decisions regarding the level and complexity of ICS staffing required to meet the needs of the event. The responding Hanford Fire Department senior officer for events involving emergency medical response, search and rescue operations, fire operations, and hazardous material emergency response operations shall be the IC and also fulfill the role of the senior emergency response official. During security events, the Hanford Fire Department and Hanford Patrol will operate under a unified command system with Hanford Patrol making all decisions pertaining to security.

The IC will communicate with the BED/BW and other support organizations as soon as possible to ensure facility processes and hazards are understood. Additionally, the IC shall establish a formal ICP as required to meet the needs of the event. The ICP shall be established in a safe location near the incident scene. Organizations supporting the ICP retain responsibility for their technical operations and provide facility expertise to the IC. The IC is responsible for the health and safety of personnel at the event scene (i.e., the impacted area under his/her direct control) and for the overall management strategy associated with the incident to ensure that functional areas are appropriately staffed and working cohesively towards mitigation of the incident.

The Incident Command Organization is staffed by pre-appointed and trained individuals as delineated in Table 2-1. Personnel working in support of the Incident Command Organization delineated in Table 2-1 must complete initial, annual, and ongoing training on their respective roles, responsibilities, and authorities within the Incident Command Organization. Drills and exercises are used to provide a format for Incident Command Organization responders to demonstrate their proficiency.

Contractor personnel shall provide a BED or BW for the purpose of supporting the Incident Command Organization as soon as possible. In the event of full implementation of the Incident Command Organization, additional facility personnel shall be available to support required functions.

2.2.1.1 Facility/Building Emergency Response Organization. Hanford Site facilities are divided into one of three types – general purpose, low-hazards, or hazardous – depending on the hazards associated with the facility.

Personnel and resources at the facility level comprise initial response capability for an emergency. Facilities shall direct appropriate emergency response actions, as delineated in the respective sections below, within the area under their control and at the scene of the emergency, including effective coordination with the IC and the Hanford EOC. Initial direction and control of emergency response at the facility prior to establishment of a formal ICP by the IC is the responsibility of the facility/building ERO.

The BED/BW fills the initial role of "Emergency Director" identified in DOE Emergency management directives and guidance documents. Elements of the Emergency Director role are transitioned to the IC and eventually to the Site Emergency Director in the Hanford EOC for emergencies classified as an Alert or higher.

The BED/BW manages facility operations and personnel, and ensures that appropriate emergency procedures are implemented. Activities include directing configuration control over facility systems and components, allocation of plant personnel to conduct facility-specific response actions within the affected facility boundary and providing support to emergency response agencies, classification or categorization and notification of the incident to the respective contractor environmental single point-of-contact and/or the Hanford EOC Shift Office, and implementation of initial, planned area/site protective actions.

A list of all BEDs and BWs assigned to low-hazards and hazardous facilities shall be located in the POC or PNNL Control Room in accordance with the Hanford Facility RCRA Permit (Dangerous Waste Portion) General Condition II.A.4. The list shall include telephone numbers (home and work) to ensure that these individuals can be reached 24 hours per day.

2.2.1.1.1 General Purpose Facilities. General purpose facilities are defined as onsite buildings or facilities that contain no hazardous materials in excess of any regulatory quantities that require emergency planning. The governing requirement for such facilities is 29 CFR 1910.38, which means that facilities where personnel are evacuated from the danger area when an emergency occurs, and are not permitted to assist in handling the emergency, are exempt from 29 CFR 1910.120(q) requirements.

The DOE O 151.1C Operational Emergency Base Program applies to general purpose facilities. The building management for general purpose facilities shall assign BWs or BEDs (primary and alternates) who shall manage and control all aspects of the initial facility response and shall direct an emergency organization made up of individuals within the facility who will assist in the protection of personnel, the environment, and property. Personnel may take emergency actions to report an emergency, initiate protective action including personnel accountability, and provide control of personnel while implementing protective actions. Typically, the emergency positions identified for these response actions include the BW/BED, Staging Area Manager, and Personnel Accountability Aides (or other contractor title for personnel performing the same or similar function). The BW/BED is responsible for emergency response at the event scene until arrival of the IC.

In addition, the building management, or designee, shall be responsible for:

- assigning and ensuring the training of the BW/BED, Staging Area Managers, and Personnel Accountability Aides (or other contractor title for personnel performing the same or similar function); and
- maintaining the facility emergency response information boards/building emergency procedures.

Specific responsibilities of the BW/BED, or designee, shall include, as applicable:

(a) activating internal facility alarms or communications systems, where applicable, to notify building occupants of protective actions to be taken;

(b) ensuring that a 911 telephone call is made when emergency assistance is required;

(c) assisting the IC, as necessary, in mitigating emergencies within the assigned building; and

(d) ensuring that building occupants take appropriate protective actions in response to events occurring in other onsite geographic areas or adjacent facilities.

The minimum training requirements for standard facility/building ERO positions are delineated in Table 12-1 of this plan.

2.2.1.1.2 Low-hazards Facilities. Low-hazards facilities are defined as facilities that contain hazardous materials but do not require establishment of an Operational Emergency Hazardous Material Program based on a hazards survey and hazards analysis. These facilities are typically subject to requirements driving preparation of an environmental, safety, and health related emergency preparedness plan/procedure, which include, but are not limited to, RCRA, CERCLA, the Toxic Substances Control Act, and the Occupational Safety and Health Administration (OSHA).[2]

[2] Permit requirement: Subsection 2.2.1.1.2 (first paragraph), Class 1 Modification 6/30/10

The DOE O 151.1C Operational Emergency Base Program applies to low-hazards facilities. The building management for low-hazards facilities shall assign BWs or BEDs (primary and alternates) who shall manage and control all aspects of the initial facility response and direct a facility/building ERO made up of individuals within the facility who will assist in the protection of personnel, the environment, and property. Typically, the emergency positions identified for these response actions include the BW/BED, Staging Area Manager, and Personnel Accountability Aides (or other contractor title for personnel performing the same or similar function); however, additional positions may be needed to implement facility-specific response actions. The BW/BED is responsible for emergency response at the event scene until arrival of the IC.

In addition, the building management, or designee, shall be responsible for:

- assigning and ensuring the training of the facility/building ERO as necessary to support the Hanford Fire Department as the designated hazardous materials emergency response agency;
- maintaining building emergency plans/procedures or facility-specific emergency response procedures, as applicable, in accordance with subsection 14.3.1 of this plan;
- ensuring that facility personnel are aware of hazards; and
- ensuring that facility personnel are trained to respond to emergencies.

Specific responsibilities of the BW/BED, or designee, shall include, as applicable:

(a) determining when an event has occurred or a condition exists that requires response in accordance with applicable state and Federal regulations;[3]

(b) activating internal facility alarms or communications systems, where applicable, to notify building occupants of protective actions to be taken;

(c) ensuring that a 911 telephone call is made when emergency assistance is required;

(d) reporting events or conditions in accordance with applicable state and Federal regulations;[4]

(e) establishing an initial command post and assigning other Incident Command Organization functions in accordance with established procedures to provide effective control at the event scene;

(f) assisting the IC, as necessary, in the mitigation of emergencies within the assigned building by:

- identifying the character, exact source, amount, and areal extent of any released material;
- assessing possible hazards to human health and the environment that may result from the release, fire, or explosion;
- taking reasonable measures (e.g., stopping processes/operations, collecting/containing released waste, removing/isolating containers) necessary to ensure that fires, explosions and releases do not occur, recur, or spread to other dangerous waste;

[3] Permit requirement: Subsection 2.2.1.1.2(a), Class 1 Modification 9/30/99

[4] Permit requirement: Subsection 2.2.1.1.2(d), Class 1 Modification 9/30/99

- monitoring for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, as appropriate;[5] and

(g) ensuring that building occupants take appropriate protective actions in response events occurring in other onsite geographic areas or adjacent facilities.

The duties of the facility/building ERO may include, but will not be limited to:

- assisting in the alerting of employees of an emergency situation;
- assisting in building evacuations and building sweeps; and
- providing assistance to the Hanford Fire Department and/or Hanford Patrol to include meeting and directing responders to the event scene, providing safe routes of travel, and providing immediate and constant interface, coordination, and information as the emergency situation requires.

The minimum training requirements for standard facility/building ERO positions are delineated in Table 12-1 of this plan.

2.2.1.1.3 Hazardous Facilities. Hazardous facilities are defined as facilities that contain hazardous materials capable of generating an Alert, Site Area Emergency, or General Emergency and require establishment of an Operational Emergency Hazardous Material Program. Facilities in this group include reactor or nuclear facilities, or nonnuclear hazard facilities. TSD units containing quantities of wastes or materials capable of generating an Alert or higher emergency will also be categorized as a hazardous facility.

The DOE O 151.1C Operational Emergency Base and Operational Emergency Hazardous Material Programs apply to the hazardous facilities. The building management for each hazardous facility shall establish and maintain a facility/building ERO with overall responsibility for the initial and ongoing response to and mitigation of an emergency. BEDs (primary and alternates) shall be assigned to manage and control all aspects of the facility response and to direct the facility/building ERO at the event scene until arrival of the IC. Typically, the emergency positions identified for these response actions include the BED, Staging Area Manager, Personnel Accountability Aides (or other contractor title for personnel performing the same or similar function), ICP Communicator, ICP Hazards Communicator, Hazards Assessor, and Facility Operations Specialist; however, additional positions may be needed to implement facility-specific response actions. Initiation of emergency lifesaving measures or support of protective actions for facilities which require self-contained breathing apparatus (SCBA) must not rely entirely on the Hanford Fire Department to provide such equipment on emergency response vehicles. The minimum assumption used for emergency planning for the Hanford Fire Department arrival shall be 10 minutes plus travel time to destination.

A BED (primary or alternate) must be within reasonable proximity to the facility (as defined by contractor policy) if work is being performed which could generate an Alert or higher emergency classification. On-call BEDs, where designated, may be used for facilities where hazardous materials are in storage and stable, and the work being performed is that of surveillance, or the routine activity poses minimal hazards.

[5] Permit requirement: Subsection 2.2.1.1.2(f), Class 1 Modification 9/30/99

The organization, size, and emergency response duties assigned to the facility/building ERO shall be based on a graded approach and upon hazards at the facility and the level necessary to support the Hanford Fire Department as the designated hazardous materials emergency response agency.

In addition, the positions and responsibilities of the facility/building ERO shall be documented in specific building emergency plans and/or procedures. The content, distribution and organizational approval of the building emergency plan and/or procedures shall be determined by the respective contractor emergency preparedness organization.

NOTE: Building emergency plans are not required for unoccupied hazardous facilities. However, BEDs shall be identified and trained to implement initial emergency response procedures.

The building management, or designee, shall be responsible for:

- assigning and ensuring the training of the facility/building ERO as necessary to support the Hanford Fire Department as the designated hazardous materials emergency response agency;
- maintaining, reviewing, and revising the building emergency plan and applicable facility-specific emergency response procedures in accordance with subsection 14.3.1 of this plan;
- ensuring that facility personnel are aware of hazards; and
- ensuring that facility personnel are trained to respond to emergencies.

Responsibilities of the BED, or designee, shall include:

(a) determining when an event has occurred or a condition exists that requires appropriate emergency event classification;[6]

(b) activating internal facility alarms or communications systems, where applicable, to implement actions to protect workers within their respective geographic area of responsibility as defined in the building emergency plan or procedures;

(c) assessing the potential or actual onsite and offsite consequences of the emergency;

(d) contacting the POC, via the 911 emergency number, to implement predetermined onsite protective actions and provide initial emergency and classification information in accordance with established procedures;

(e) reporting events or conditions in accordance with applicable state and Federal regulations;[7]

(f) establishing an initial command post and assigning other Incident Command Organization functions in accordance with established procedures to provide effective control at the event scene;

(g) assisting the IC, as necessary, in the mitigation of emergencies within the assigned building by:

- identifying the character, exact source, amount, and areal extent of any released materials;

[6] Permit requirement: Subsection 2.2.1.1.3(a), Class 1 Modification 9/30/99

[7] Permit requirement: Subsection 2.2.1.1.3(e), Class 1 Modification 9/30/99

- taking reasonable measures (e.g., stopping processes/operations, collecting/containing released waste, removing/isolating containers) necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other dangerous waste,
- monitoring for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, as appropriate;[8] and

(h) ensuring that building occupants take appropriate protective actions in response to events occurring in other onsite geographic areas or adjacent facilities.

The duties of the facility/building ERO may include, but will not be limited to:

- assisting in the alerting of employees of an emergency situation;
- assisting in the safe evacuation of the incident scene hazard area;
- providing immediate first-aid if required;
- placing operating systems or controls in a safe configuration;
- implementing or supporting the implementation of protective actions for the general population to include roadblocks and building sweeps;
- assisting in emergency classification and emergency notification of such classification within established regulatory time limits;
- providing assistance to the Hanford Fire Department and/or Hanford Patrol to include meeting and directing responders to the event scene, providing safe routes of travel, and providing immediate and constant interface, coordination, and information as the emergency situation requires;
- serving as emergency response team members in support of the Hanford Fire Department for entry into the incident scene hazard area for mitigation where personnel protective equipment requirements do not specify Level A or Level B dermal protection (refer to Appendix B of 29 CFR 1910.120);
- providing chemical monitoring and assessment, in conjunction with the Hanford Fire Department Industrial Hygienist, for emergency response;
- providing radiological monitoring and assessment for emergency response; and
- providing support for chemical and/or radiological decontamination.

The minimum training requirements for standard facility/building ERO positions are delineated in Table 12-1 of this plan.

2.2.1.2 Site Contractor Emergency Response Personnel

2.2.1.2.1 Hanford Fire Department. The Hanford Fire Department is the designated incident command agency responsible for fire suppression operations, hazardous material emergency response operations (radiological and nonradiological) and chemical/biological incidents on the site, medical services, and search and rescue (including confined space, high angle, and water rescue).

[8] Permit requirement: Subsection 2.2.1.1.3(g), Class 1 Modification 9/30/99

In this capacity, the Hanford Fire Department shall provide a hazardous materials response team, as defined in 29 CFR 1910.120(q)(6)(i)-(v) and NFPA 472, as well as a qualified Safety Officer for all emergency response activities.

As a 24-hour operational facility/dispatch center, the Hanford Fire Department also monitors facility fire alarm systems, and coordinates and provides emergency medical services on the Hanford Site. Emergency medical support responsibilities are further delineated in subsection 8.1.1 of this plan.

2.2.1.2.2 Hanford Patrol. The Hanford Patrol monitors alarm systems and provides security emergency response operations including coordination of the movement of emergency personnel through security gates, evacuation assistance, and traffic control and barricade establishment where needed. Additional law enforcement is available through agreements with local and Federal agencies at the request of RL. The Hanford Patrol and Hanford Fire Department operate under a unified command system for security events with Hanford Patrol making all decisions pertaining to security.

Additionally, the POC, a 24-hour operational facility/dispatch center, is responsible for emergency functions that include, but are not limited to:

- operating the site's enhanced 911 system;
- acting as the single point-of-contact to initiate emergency response by
  - notifying the BED/BW (when not on the premises)
  - requesting response from the Hanford Fire Department
  - notifying appropriate on-call personnel
  - activating or requesting activation of appropriate alarm signals;
- activating the Hanford EOC Shift Office conference bridge upon notification of a declared emergency and implementing onsite protective actions by activating applicable components of the Hanford Site Emergency Alerting System; and
- receiving emergency response telephone calls during offsite shipments of DOE-owned hazardous materials.

Emergency medical support responsibilities of the Hanford Patrol are further delineated in subsection 8.1.3 of this plan.

2.2.1.3 Other Emergency Response Support Personnel. Some emergency situations may require facility or site support personnel to be used for emergency response at the event scene that are not assigned positions within the Hanford ERO. These emergency response support personnel – termed either as Skilled Support Personnel or Specialist Employees – are not trained to operate within the Hanford Incident Command System and must only be used for specific tasks defined in the following subsections.

2.2.1.3.1 Skilled Support Personnel. Personnel needed to operate specific support equipment, including those within the incident scene hazard area but are not addressed in specific emergency response procedures, may be designated as Skilled Support Personnel. Such personnel shall receive a briefing prior to commencing any work. Training requirements in accordance with 29 CFR 1910.120(q)(4) are delineated in subsection 12.2.2.3.1 of this plan.

2.2.1.3.2 Specialist Employees. Safety professionals and environmental specialists who provide technical advice within their field of expertise, but are not addressed in specific emergency response procedures, may be designated as Specialist Employees. Such personnel will only provide expertise and advice to the IC when requested and may not enter the incident scene hazard area. Training requirements in accordance with 29 CFR 1910.120(q)(5) are delineated in subsection 12.2.2.3.2 of this plan.

2.2.2 Hanford Emergency Operations Center

The Hanford EOC is an emergency response facility maintained by RL for the purpose of providing an area where personnel may convene during emergency conditions to provide essential response functions. These functions include public information, offsite protective action recommendations, field monitoring and sampling, hazard assessment, oversight of onsite mitigative activities, and oversight of onsite protective actions.

The Hanford EOC shall be activated upon declaration of an Alert or higher emergency and should be operational within an hour after activation.

The Hanford EOC may also be fully or partially activated in the following situations.

- As directed by the RL/ORP/PNSO Manager (or designees) when events occur that are not classified as an Alert or higher emergency but where action to provide monitoring or assistance to the event scene or other agencies, is requested. Such events may include:
  - Hanford Site emergency conditions that potentially involve significant onsite or offsite consequences;
  - security events;
  - natural disasters (i.e., earthquake, tornado) that could or does result in significant onsite or offsite public or environmental impact;
  - requests from other government agencies for support of regional emergencies; or
  - threats or acts of terrorism, or when a national emergency is declared by the President of the United States or the United States Congress.
- As requested by the BED/BW, IC, or EDO where action to provide monitoring or assistance to the event scene is needed.
- As requested by the RAP team leader to support a RAP response.
- In response to non-DOE emergencies that affect the Hanford Site.
- In response to transportation emergency preparedness events involving the offsite shipment of DOE-owned hazardous materials.

The Hanford EOC is made up of several organizations that are responsible for implementing defined emergency response tasks. These organizational areas are defined in the following subsections. Detailed procedures for the activation, staffing, and operation of the Hanford EOC are contained in DOE-0223, *Emergency Plan Implementing Procedures*. Position-specific checklists are maintained separately for positions in the Hanford EOC.

2.2.2.1 Policy Team. The primary functions of the Policy Team are the oversight of onsite activities, approval and communication of offsite protective action recommendations, approval of reclassification recommendations, oversight of public information activities, and coordination with offsite agencies.

The Emergency Manager is responsible for oversight operations of the Hanford EOC and for ensuring implementation of the responsibilities of the National Response Framework's coordinating agency. In consultation with the Hanford EOC staff, the Emergency Manager approves emergency reclassification and termination, offsite PARs, and notifications.

Once operational, general functions of the Policy Team include:

- overview of onsite response and mitigation actions, and providing assistance to the event contractor as needed;
- providing offsite notifications and PARs to state, local, and Federal agencies, and continuous updates to the state/counties about conditions;
- providing direction and control, as appropriate, during a security incident;
- approving the reclassification or termination of the emergency;
- directing the activities of the JIC in providing timely and accurate release of information to the public and media, including approval of emergency information;
- requesting the national DOE emergency response assets as needed;
- providing liaisons to offsite emergency centers and responding DOE emergency response assets;
- providing a representative to DOE-HQ as requested; and
- designating a recovery organization.

During security incidents, RL is responsible for decisions that address mitigation of the security event. This involves direction and control of Hanford Site security and patrol forces, and coordination of facility response. However, the Federal Bureau of Investigation (FBI) may exercise the option to take command of specific aspects of security events involving the violation of the Atomic Energy Act of 1954 or other Federal statutes (e.g., criminal investigation, coordinating activities of other law enforcement agencies). Associated response by site contractor personnel for personnel and operational safety rests with the IC and the BED.

2.2.2.2 Joint Information Center. The primary function of the JIC is the dissemination of accurate and timely information to the public and employees regarding activities during declared emergencies. The JIC operates under the direction of the Public Information Director and is staffed by RL/ORP/PNSO, contractor, state, and county communication professionals responsible for coordinating the release of information to the public and media.

The JIC provides a single location where site personnel can coordinate the release of information with other Federal agencies, state, and local jurisdictions. Provisions shall be made at the JIC for representatives from the states of Washington and Oregon, plume EPZ counties, and other Federal agencies that may be involved in the emergency response.

The functions performed at the JIC include:

- preparing and coordinating information released to the public and media;
- answering questions of the public and media; and
- rumor control.

2.2.2.3 Site Management Team. The primary functions of the SMT are to provide support to the Incident Command Organization by providing additional resources not easily obtained by the IC; tracking the status of onsite protective actions; developing and directing implementation of additional onsite protective actions away from the event scene (i.e., the area not under the direct control of the IC) as required; and providing communications support. The SMT is also responsible for hazards assessment activities, tracking personnel medical issues, developing additional offsite protective action recommendations, record keeping, and overall operation of the center.

The SMT is made up of four support organizations that are responsible for implementing defined emergency response tasks. These organizations are defined below.

2.2.2.3.1 Executive Team and Support Staff. The Site Emergency Director is responsible for the coordination of all SMT activities. In this role, the Site Emergency Director is responsible for the activities of the Event Support Coordinator, EOC Operations Manager, and the Consequence Assessment Director. Since RL has an operational function over Hanford security forces, the Security Director in the Policy Team is responsible for the activities of the Security Operations Coordinator.

The Contractor Representative and Emergency Preparedness Advisor provide support to the Site Emergency Director.

2.2.2.3.2 Security and Event Support. As part of the SMT staff, the Security Operations Coordinator's primary functions are security operations, which include interface with local law enforcement agencies, coordination with the Federal Bureau of Investigation (FBI), and oversight of onsite patrol activities. The Security Operation Coordinator reports directly to the Security Director. The Security Director will communicate planned actions of security forces to the Site Emergency Director to ensure all safety and security issues are addressed and coordinated. The Site Emergency Director, in conjunction with the Security Director, is responsible for periodically providing status information to the Emergency Manager and the Policy Team.

The Event Support Coordinator is responsible for event support activities to include site support services, technical support, communications with the event scene, and coordination with medical assessment activities. The Event Support Coordinator reports directly to the Site Emergency Director.

2.2.2.3.3 Unified Dose Assessment Center.[9] As part of the SMT, the primary Unified Dose Assessment Center (UDAC) functions are monitoring and evaluating existing emergency conditions in order to develop additional protective action recommendations. The UDAC is responsible for field team activities to include plume tracking, monitoring, and sampling.

Representatives from the states of Washington and Oregon participate in the development of recommendations and provide direction for offsite environmental monitoring. The UDAC is operated by site contractor personnel with knowledge in the technical areas of meteorology, toxicology, industrial hygiene, and health physics. The Consequence Assessment Director is responsible for all UDAC activities and reports directly to the Site Emergency Director.

Specific UDAC responsibilities include:

- acquiring necessary data and measurements to evaluate personnel radiation doses and chemical exposures resulting from the event;

[9] Permit requirement: Subsection 2.2.2.3.3, Class 1 Modification 9/30/99

- assessing the potential for onsite and offsite consequences of a release of radioactive or nonradioactive materials based on meteorological conditions, source term, location and dispersal of the hazardous material;
- assisting the event contractor or other Hanford Site contractors in onsite hazard assessment or development of onsite protective actions;
- analyzing the consequences associated with evacuating versus remaining in a take cover situation for onsite personnel and recommending appropriate additional protective actions if necessary;
- developing offsite PARs in coordination with representatives from the states of Washington and Oregon; and
- coordinating and directing emergency environmental monitoring teams that are not assigned to the event facility. This may include state field teams performing offsite monitoring if requested by the states.

2.2.2.3.4 Hanford EOC Operations. As part of the SMT, the primary functions of the Hanford EOC Operations team are administration, record keeping tasks, and dissemination of information to offsite agencies. The EOC Operations Manager is responsible for these activities. In this role, the EOC Operations Manager reports directly to the Site Emergency Director.

2.2.2.4 Event Coordination Team. The Event Coordination Team is a partial staffing of the Hanford EOC that allows for a graded response to events occurring on or off the Hanford Site which are not further classified as an Alert or higher emergency. The Event Coordination Team can be used to provide resource and communications support to the ICP; to monitor abnormal conditions that could impact site workers, facilities, or operations (e.g., power outage, severe weather conditions); or for events that may require additional monitoring or distributing information to site workers and the public.

The Event Coordination Team does not require that all Hanford EOC positions be filled. Instead, the on-call Site Emergency Director or EDO will determine staffing and length of operation. Detailed procedures for the activation and responsibilities of the Event Coordination Team are contained in DOE-0223, *Emergency Plan Implementing Procedures*.

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3.0 OFFSITE RESPONSE INTERFACES

3.1 OVERVIEW[1]

Interfaces and coordination with offsite agencies are important in the planning, preparedness, response, and recovery elements of the Hanford emergency management program. As such, RL shall interface with Federal, tribal, state, local, and private organizations and/or agencies:

- that have a responsibility to protect the public and environment within the EPZs of the Hanford Site;
- with which RL supports as the Regional Coordinating Office for Region 8 (Oregon, Washington, and Alaska); and
- with which RL has entered into special agreements for assistance.

Where appropriate, RL shall develop and maintain agreements to formalize areas of understanding, cooperation, and support with offsite agencies.

3.1.1 Planning and Preparedness[2]

The modes of interface for planning and preparedness activities, as is determined beneficial by the parties, may include:

- coordination of emergency plans and procedures;
- periodic meetings to share information and coordinate activities;
- training opportunities related to offsite responsibilities;
- development of agreements for support to and from offsite agencies;
- participation in annual exercises; and
- development of public information programs.

3.1.2 Response and Recovery

In the event of an emergency on or affecting the Hanford Site, RL/ORP/PNSO shall interface with offsite agencies to ensure coordination and support of response and recovery activities. These interfaces may include:

- notification and periodic updates to local jurisdictions within the plume EPZ, states that contain portions of the ingestion EPZ, and other agencies that may be requested to provide assistance (see respective subsections in section 5.0);
- communication and coordination with DOE-HQ;
- representation in appropriate offsite emergency centers;
- offsite representation in the Hanford EOC;
- PARs to offsite agencies; and
- event scene interface with offsite responders.

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[1] Permit requirement: Subsection 3.1, Class 1 Modification 9/30/99

[2] Permit requirement: Subsection 3.1.1, Class 1 Modification 9/30/99

Communications with state and local emergency centers are depicted on Figure 3-1.

3.2 FEDERAL AGENCIES

3.2.1 U.S. Department of Energy-Headquarters

The DOE-HQ Program Secretarial Officers are responsible for ensuring implementation of policy and requirements for activities conducted under their respective areas of cognizance.

The DOE-HQ Operations Center serves as the point-of-contact for receipt of all emergency notifications and reports. Accordingly, the DOE-HQ Operations Center receives, coordinates, and disseminates emergency information to DOE-HQ elements and Program Office emergency points-of-contact, the White House Situation Room, and other Federal agencies. As such, emergency status reports shall be forwarded to the DOE-HQ Operations Center on a continuing basis until the emergency is terminated.

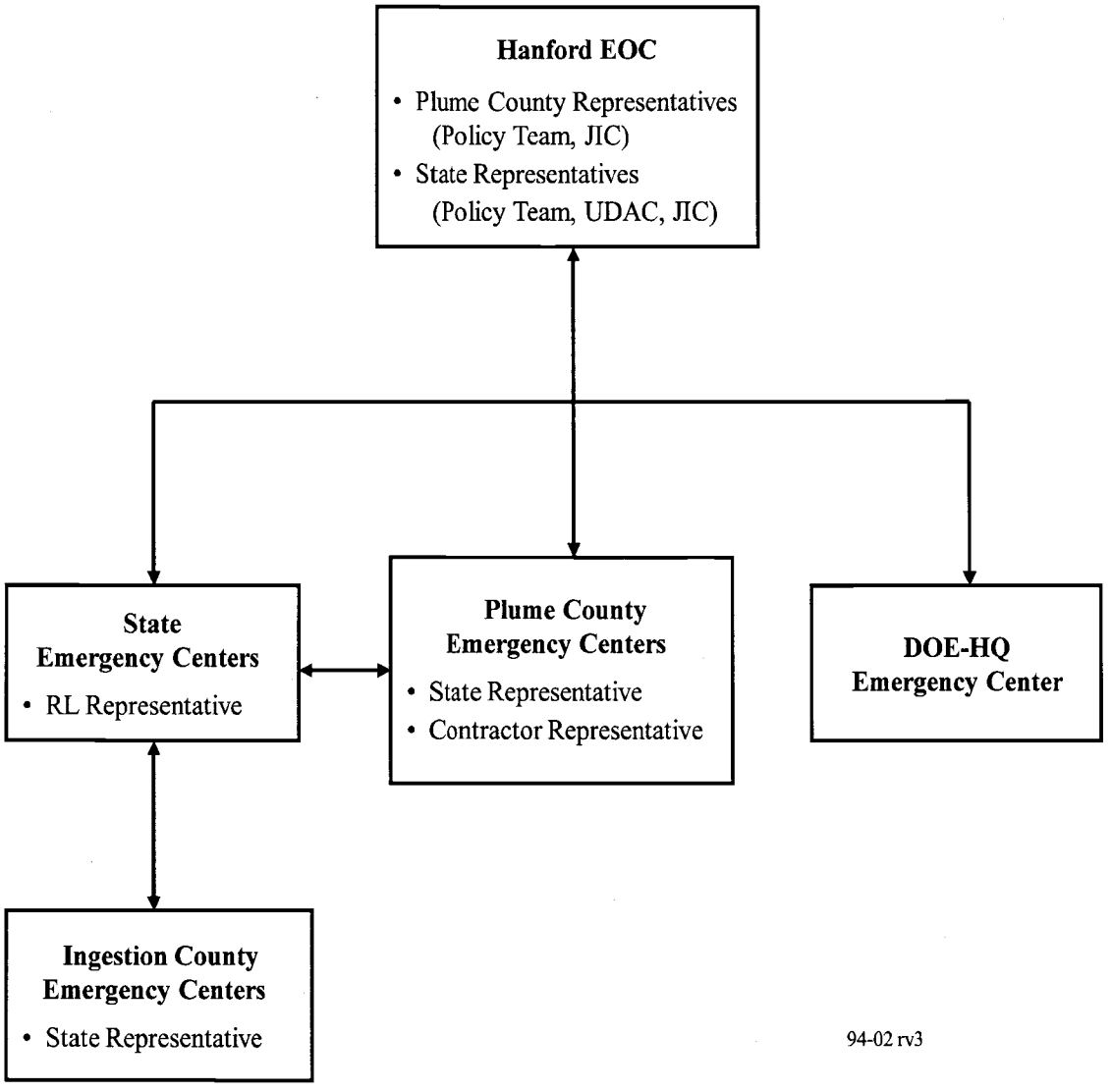
In the event of an emergency, a DOE-HQ Emergency Management Team is convened to:

- receive information on the facility, site, or area response;
- monitor the Operations/Field Office;
- provide appropriate support and assistance;
- assist with issue resolution; and
- coordinate interagency, Congressional, and public information activities at the national level.

DOE also has five emergency response assets available to assist at events if conditions warrant. These assets include:

- Aerial Measuring System (AMS) – provides fixed-wing aircraft and/or helicopters for remote sensing to detect and measure for ground deposition or perform aerial photography and multi-spectral imaging;
- National Atmospheric Release Advisory Capability (NARAC) – develops predictive plots to provide near real-time assessments of the consequences of accidental or potential radiation releases;
- Federal Radiological Monitoring and Assessment Center (FRMAC) – coordinates the Federal radiological monitoring, assessment, and evaluation of data during a radiological emergency;
- Radiological Assistance Program (RAP) – provides radiological assistance during all types of radiological accidents or emergencies (considered DOE's First Responder team); and
- Radiation Emergency Assistance Center/Training Site (REAC/TS – provides health professionals and coordinators for consultation or direct medical care on health problems associated with radiation accidents.

Requesting emergency response asset assistance is delineated in subsection 5.1.1.2.3.


Hanford EOC
• Plume County Representatives (Policy Team, JIC)
• State Representatives (Policy Team, UDAC, JIC)
State Emergency Centers
• RL Representative
Plume County Emergency Centers
• State Representative
• Contractor Representative
DOE-HQ Emergency Center
Ingestion County Emergency Centers
• State Representative
94-02 rv3

3.2.2 Federal Bureau of Investigation

The role of the FBI is to serve as the primary U.S. Law Enforcement Agency responsible for investigating alleged or suspected violations of the Atomic Energy Act of 1954, as amended, and other Federal statutes. As such, security events of national consequence occurring at the Hanford Site and within the jurisdiction of the U.S. Department of Justice (e.g., theft of special nuclear material, terrorist activity, weapons of mass destruction incidents) will be communicated to the FBI.

During these types of security events, the FBI Special-Agent-In-Charge will coordinate with the Emergency Manager, or designee, to receive an event status briefing and determine areas of responsibility. The FBI has the lead responsibility for criminal investigations of terrorist acts or terrorist threats by individuals or groups inside the U.S. or directed at U.S. citizens, as well as for coordinating activities of other law enforcement agencies to detect, prevent, and disrupt terrorist attacks.

3.2.3 U.S. Coast Guard[3]

The U.S. Coast Guard (USCG) (through the Thirteenth District Commander in Seattle, Washington and the Captain of the Port in Portland, Oregon) may regulate activities on navigable waters within the Hanford Site, when necessary, to prevent harm to persons, property, and the environment in or on those waters.

The USCG will close the appropriate portion of the Columbia River and make a broadcast to mariners, as requested by Benton or Franklin County.

In the event of an emergency, the Hanford EOC Shift Office will make notifications and provide information to the USCG in Portland, Oregon.

3.2.4 U.S. Environmental Protection Agency

The EPA is responsible for coordinating the intermediate and long-term offsite radiation monitoring activities.

In the event of an emergency, the Hanford EOC shall notify and provide information to the EPA Region 10 in Seattle, Washington.

3.2.5 Federal Aviation Administration

The Federal Aviation Administration (FAA) may make flight restrictions for aircraft under their jurisdiction over the Hanford Site.

In the event of an emergency, the IC may request the FAA Seattle Center to impose a temporary flight restriction over the Hanford Site.

3.2.6 Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) is responsible for coordinating Federal assistance when the resources of state and local authorities are overwhelmed and Federal assistance has been requested.

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[3] Permit requirement: Subsection 3.2.3, Class 1 Modification 12/31/12

At the time of a declaration of an emergency, the Hanford EOC notifies and provides information to the FEMA Region 10 office in Bothell, Washington.

3.3 STATE GOVERNMENT

States, along with local governments, share the responsibility for the protection of the public and the environment. The responsibilities and concept of operations for state agencies are described in the emergency response plans of each state.

RL shall work with the states of Washington and Oregon to assist in development of their program and response plans for an emergency at the Hanford Site. Periodic meetings will be conducted with the states to coordinate plans and share information. General descriptions of emergency responsibilities as well as areas of cooperation and understanding between RL and the states are delineated in memoranda of understanding (MOU). Copies of the MOUs are provided in Appendix B.

3.3.1 The State of Washington[4]

The Governor of Washington is responsible for command and control of state resources to maintain and preserve life, property, and the environment in Washington. The lead agency for emergency planning and response activities is the Emergency Management Division of the Military Department. Other state agencies that participate in the planning process and have emergency response roles include the:

- Department of Health;
- Department of Agriculture;
- State Patrol;
- Department of Ecology; and
- Department of Transportation.

An emergency response plan is maintained by the Emergency Management Division that describes the concept of operations and roles and responsibilities of the state agencies. Emergency procedures are maintained by each state agency.

Responsibilities of the state of Washington include:

- providing a 24-hour single point-of-contact for the receipt of emergency notifications from the Hanford Site;
- disseminating information to potentially affected counties within the plume and ingestion EPZs;
- coordinating ingestion protective action decisions and public information with the counties, the state of Oregon, and RL;
- providing assistance to counties as requested;
- evaluating offsite emergency PARs made to plume EPZ counties;
- making protective action decisions to protect public health from ingestion-related impacts, such as contamination of the food chain;

[4] Permit requirement: Subsection 3.3.1, Class 1 Modification 12/31/08

- performing field environmental radiological monitoring and dose assessments;
- providing guidance on emergency worker exposure and authorizing emergency workers to exceed protective action guides;
- implementing food, milk, and animal-feed control measures; and
- requesting Federal assistance as required.

3.3.2 The State of Oregon[5]

The Governor of Oregon is responsible for directing and controlling state activities to protect the lives and property of Oregon citizens. The lead agency for Hanford Site emergency planning is the Oregon Department of Energy. Other state agencies that participate in the planning process and have emergency response roles include the:

- State Public Information Officer;
- Public Health;
- Emergency Management Division;
- Department of Agriculture;
- Oregon State University Radiation Center
- Military Department;
- State Police; and
- Department of Transportation.

An emergency response plan is maintained by the Oregon Department of Energy that describes the concept of operations and roles and responsibilities of state agencies. Emergency procedures are maintained by each state agency.

Responsibilities of the state of Oregon include:

- providing a 24-hour single point-of-contact for the receipt of emergency notifications from the Hanford Site;
- making protective action decisions for the state of Oregon;
- coordinating protective action decisions and public information with counties, the state of Washington, and RL;
- coordinating state and local emergency response within the state of Oregon;
- performing field environmental radiological monitoring and dose assessments;
- providing guidance on emergency worker exposure and authorizing emergency workers to exceed protective action guides;
- providing assistance to Oregon counties within the ingestion EPZ;
- implementing food, milk, and animal-feed control measures; and
- requesting Federal assistance as required.

[5] Permit requirement: Subsection 3.3.2, Class 1 Modification 12/31/08

3.4 LOCAL ORGANIZATIONS[6]

Cities and counties are responsible for protecting the lives and property of their residents. The responsibilities and concept of operations for local governments are described in the emergency response plans of each jurisdiction.

RL shall work with local emergency response organizations through the county and state emergency management organizations. Generally, RL shall interface directly with emergency response and planning organizations providing service to those areas within a plume EPZ of a Hanford Site facility. Interface with those jurisdictions within the ingestion EPZ generally shall be accomplished through the state emergency management organization. To accomplish the necessary close coordination with local agencies, periodic meetings shall be conducted to share information and discuss concerns.

3.4.1 Plume Emergency Planning Zone Counties

Portions of Benton, Franklin, and Grant Counties are within plume EPZs of a Hanford Site facility. The Boards of County Commissioners are responsible for making emergency protective action decisions and implementing emergency response actions, as necessary, to protect their residents outside the Hanford Site boundary. The lead agency for emergency planning and coordination of emergency response is the county emergency management agency. County emergency response plans and procedures are developed by the emergency management agencies, working with county, city, and volunteer emergency response agencies, such as:

- law enforcement;
- fire and emergency medical;
- public works/road departments;
- hospitals; and
- American Red Cross.

The emergency responsibilities of the plume EPZ counties include:

- making and implementing protective action decisions to protect citizens who live within the plume EPZ;
- implementing protective action decisions, made by the state of Washington, for ingestion-related impacts to residents within the ingestion EPZ;
- disseminating alert and warnings to the public and providing emergency public information; and
- coordinating response actions and public information with neighboring counties, the state of Washington, and RL.

RL maintains agreements with Benton, Franklin, and Grant Counties that outline the areas of responsibility and cooperation (see Appendix B).

[6] Permit requirement: Subsection 3.4 Class 1 Modification 9/30/99

3.4.1.1 Law Enforcement.[7] RL SES interfaces with local law enforcement agencies for support to the Hanford Site during emergencies. Via a contractual agreement, the Benton County Sheriff's Office provides law enforcement on the Hanford Site (i.e., traffic enforcement and criminal investigation), and assists in access control; and, as such, coordinates activities with RL SES and the Hanford Patrol.

RL SES maintains memorandums of understanding with the local law enforcement agencies.

3.4.1.2 Fire and Emergency Medical.[8] The Hanford Fire Department is signatory to the Tri-County Mutual Aid Agreement for fire agencies. The agreement provides mutual aid for fire or medical emergencies.

The Hanford Fire Department meets regularly with local fire agencies. The Hanford Fire Department and HPMC representatives meet routinely with emergency medical service agencies to coordinate and share information.

3.4.1.3 Hospitals.[9] RL maintains agreements with local hospitals, which provide for the care of injured, contaminated (chemical or radiological) Hanford Site personnel. These hospitals include:

- Lourdes Medical Center;
- Trios Health; and
- Kadlec Regional Medical Center.

RL shall provide for training and exercise support, as needed, related to the services provided to the Hanford Site. RL shall also provide health physics support and will work in cooperation with the hospitals to develop protocols for the diagnosis and treatment of injuries and illnesses involving chemical and/or radiological contamination as necessary.

3.4.2 Ingestion Emergency Planning Zone Counties

Counties within the ingestion EPZ of the Hanford Site are responsible to implement measures to protect their residents from potential ingestion related impacts. In the state of Washington, the counties of Adams, Benton, Franklin, Grant, Kittitas, Klickitat, Walla Walla, and Yakima are within the 50-mile (80-kilometer) ingestion EPZ. In the state of Oregon, the counties of Morrow and Umatilla are included. Ingestion EPZ counties have emergency response plans that describe their responsibilities in the event of an emergency at the Hanford Site.

RL shall coordinate emergency planning and preparedness for ingestion counties through the Washington State Emergency Management Division and the Oregon Department of Energy. Ingestion county responsibilities include:

- coordinating with the state and implementing decisions regarding protective measures for its residents within the ingestion EPZ; and
- consulting with the respective state emergency center on the identification of access control points, food control areas, food control stations, and strategies for relocation, restoration, and recovery in contaminated areas.

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[7] Permit requirement: Subsection 3.4.1.1, Class 1 Modification 12/31/08

[8] Permit requirement: Subsection 3.4.1.2, Class 1 Modification 12/31/12

[9] Permit requirement: Subsection 3.4.1.3, Class 1 Modification 6/30/14

3.5 TRIBAL ORGANIZATIONS

RL shall provide appropriate information to the impacted tribal organizations to coordinate planning for ingestion-related response actions of the tribe(s).

3.6 PRIVATE ORGANIZATIONS

The Hanford Site emergency management program shall address private facilities on or near the site. These facilities may be impacted by an emergency at the Hanford Site, or may impact Hanford Site facilities if they experience an emergency.

RL shall coordinate emergency planning and preparedness activities with onsite private facilities. In the event of an emergency at a Hanford Site facility, onsite private facilities will receive notifications and information from RL.

Where emergencies at facilities operated by private organizations may impact the Hanford Site, RL shall ensure that the emergency management program addresses actions that must be taken to protect site workers and facilities.

Areas of cooperation with private organizations shall be documented in memorandums of understanding.

3.7 MEMORANDA OF UNDERSTANDING

RL shall develop and implement mutual assistance agreements with offsite agencies to document areas of cooperation and assistance when appropriate and as identified in Federal, state, and local regulations (see Table 3-1).

RL SES is responsible for executing and maintaining MOUs related to security and emergency preparedness. The Hanford Fire Department shall execute and maintain MOUs within its area of responsibility. MOUs should be reviewed periodically (unless stated otherwise) and revised as needed.

Copies of MOUs are included in Appendix B of this plan.

Table 3-1

Memorandums of Understanding[10]

PARTIES	SERVICES/AREAS OF COPERATION	POINTS OF CONTACT	CONSTRAINTS	DATE	EXPIRATION DATE	WHERE ON FILE
State of Washington	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site.	Washington Emergency Management Division	None	12/10/12	02/28/18 or until canceled by any party after 60 days written notice to the other parties.	RL SES
State of Oregon	Document areas of cooperation between the state of Oregon and RL in the planning for and providing notification and interface in the event of an incident on the Hanford Site.	Oregon Department of Energy	None	07/16/13	Continue until canceled by either party by 30 days prior written notice to the other party.	RL SES
Benton County	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site.	Benton County Emergency Management	None	11/28/11	Continue until canceled by either party by written notice to the other.	RL SES
Franklin County	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site.	Franklin County Emergency Management	None	12/28/11	Continue until canceled by either party by written notice to the other.	RL SES
Grant County	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site.	Grant County Emergency Management	None	12/28/11	Continue until canceled by either party by written notice to the other.	RL SES
Energy Northwest	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site.	Energy Northwest Emergency Preparedness	The specific areas of assistance will be provided based upon availability, and are limited to those emergency actions necessary to protect onsite personnel, the public health and safety, and the environment in the event of a major emergency at the Hanford Site or Energy Northwest.	05/07/07	Continue until canceled by either of the parties upon 60 days written notice to the other party.	RL SES
AREVA NP, Inc.	Establishes means by which RL can assist AREVA NP through use of RL facilities during an emergency at the AREVA NP plant in Richland, Washington	AREVA NP	Emergencies affecting the Hanford Site or Hanford facilities take precedence over all other uses of the RL facilities.	05/06/11	Continue until canceled by either of the parties upon 30 days written notice to the other party.	RL SES

[10] Permit requirement: Table 3-1, Class 1 Modification 6/30/14

PARTIES	SERVICES/AREAS OF COPERATION	POINTS OF CONTACT	CONSTRAINTS	DATE	EXPIRATION DATE	WHERE ON FILE
Lourdes Medical Center (Lourdes) Pasco, Washington	Significantly injured, contaminated persons will be admitted to facility for appropriate medical care.	Lourdes Administrator	Lourdes will be limited to activities performed at the hospital.	05/07/07	Continue until canceled by either of the parties upon 30 days written notice to the other party.	RL SES
Kadlec Medical Center (KMC) Richland, Washington	Significantly injured, contaminated persons will be admitted to facility for appropriate medical care.	KMC Administrator	KMC will be limited to activities performed at the hospital.	05/07/07	Continue until canceled by either of the parties upon 30 days written notice to the other party.	RL SES
Kennewick General Hospital (KGH) Kennewick, Washington	Significantly injured, contaminated persons will be admitted to facility for appropriate medical care.	KGH Administrator	KGH will be limited to activities performed at the hospital.	05/07/07	Continue until canceled by either of the parties upon 30 days written notice to the other party.	RL SES
Tri-County Mutual Aid Agreement	Provide mutual aid to parties hereto desire to augment the fire and emergency medical protection available in their establishments, districts, agencies, and municipalities in the event of large fires or conflagrations or other disaster.	Hanford Fire Department	Assistance under the agreement is not mandatory.	02/05/98	Remain in full force and effect until canceled by mutual agreement of the parties hereto or by written notice by one party to the other party giving ten days notice of said cancellation.	Hanford Fire Department
Richland Police Department	Mutual law enforcement assistance.	Richland Police Department	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	04/02/09	Indefinite duration.	RL SES
West Richland Police Department	Mutual law enforcement assistance.	West Richland Police Department	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	04/02/09	Indefinite duration.	RL SES
Kennewick Police Department	Mutual law enforcement assistance.	Kennewick Police Department	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	04/27/09	Indefinite duration.	RL SES
Benton County Sheriff	Mutual law enforcement assistance.	Benton County Sheriff	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	04/03/09	Indefinite duration.	RL SES

PARTIES	SERVICES/AREAS OF COPERATION	POINTS OF CONTACT	CONSTRAINTS	DATE	EXPIRATION DATE	WHERE ON FILE
Franklin County Sheriff	Mutual law enforcement assistance.	Franklin County Sheriff	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	04/07/09	Indefinite duration.	RL SES
Washington State Patrol	Mutual law enforcement assistance.	Washington State Patrol	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	04/29/09	Indefinite duration.	RL SES
Adams County Sheriff	Mutual law enforcement assistance.	Adams County Sheriff	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	04/07/09	Indefinite duration.	RL SES
Grant County Sheriff	Mutual law enforcement assistance.	Grant County Sheriff	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	04/06/09	Indefinite duration.	RL SES
Yakima County Sheriff	Mutual law enforcement assistance.	Yakima County Sheriff	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	04/07/09	Indefinite duration.	RL SES
Pasco Police Department	Mutual law enforcement assistance.	Pasco Police Department	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	04/03/09	Indefinite duration.	RL SES
U.S. Fish and Wildlife Service (FWS) and Mid-Columbia River National Wildlife Refuge Complex (NWRC)	Mutual law enforcement assistance.	FWS and NWRC	Agreement strictly for internal management purposes. It is not legally enforceable and not to create legal obligation.	07/28/09	Indefinite unless terminated upon 30 days written notice by either party to the other party.	RL SES
Washington Department of Fish and Wildlife (WDFW)	Mutual law enforcement assistance.	WDFW	Agreement strictly for internal management purposes. It is not legally enforceable and not to create legal obligation.	04/28/09	Indefinite unless terminated upon 30 days written notice by either party to the other party.	RL SES

4.0 EVENT CATEGORIZATION, CLASSIFICATION, AND OTHER DETERMINATIONS

Categorization and classification of events are crucial to ensuring that appropriate notifications and response actions are promptly initiated. Event categorization and classification criteria are developed and maintained to include events that require similar actions. The spectrum of actions triggered by categorization range from management activities that are not required to be initialized until after an event is closed out (i.e., occurrence reporting), to full activation of onsite and offsite emergency response organizations.

At the Hanford Site, six event categories are used to meet the requirements of DOE Orders. The six event categories are: Operational Emergency, Significance Category 1, Significance Category R, Significance Category 2, Significance Category 3, and Significance Category 4. Depending on the severity, an Operational Emergency may further be classified as an Alert, Site Area Emergency, or General Emergency.

In addition to categorization and classification, state and Federal regulations and mutual agreements between RL and state and county agencies require that events be assessed to determine if they meet RCRA contingency plan implementation criteria in order to comply with WAC-173-303-360(2)(d) requirements, or if they may generate public concern or media interest, which are termed as an Abnormal Event.

Since events may meet one or more event criteria, a sequential evaluation process prioritized according to the time urgency of the required actions is employed. This section describes the provisions that shall be established and maintained as methods to be used to recognize, categorize, and classify events in order to protect workers, the public, and the environment. The Significance Category 1, R, 2, 3, and 4 categories are used solely for occurrence reporting purposes, which are delineated in DOE O 232.2, *Occurrence Reporting and Processing of Operations Information.* Occurrence reporting is not addressed in this plan.

4.1 OPERATIONAL EMERGENCY

Operational Emergencies are major unplanned or abnormal events or conditions that involve or affect facilities/activities by causing or having the potential to cause serious health and safety or environmental impacts; require resources from outside the immediate/affected facility or local event scene to supplement the initial response; and require time-urgent notifications to initiate response activities at locations beyond the event scene.

NOTE: Hanford Site response agencies (e.g., Hanford Fire Department, Hanford Patrol, etc.) are not considered to be resources from outside the immediate/affected facility or local event scene.

Operational Emergencies are divided into Base Program Operational Emergencies or Hazardous Material Operational Emergencies. Such emergencies are caused by, involve, or affect DOE facilities or activities and represent, cause, or have the potential to cause the events or conditions described in the respective subsections below. Incidents that can be controlled by employees or maintenance personnel in the immediate/affected facility or area are not Operational Emergencies. Incidents that do not pose a significant hazard to safety, health, and/or the environment and that do not require a time-urgent response are not Operational Emergencies. Initiating events that warrant categorization as Operational Emergencies shall be included in site- and facility-specific procedures.

An event must be categorized as an Operational Emergency as promptly as possible, but no later than 15 minutes after event recognition/identification/discovery by an individual with categorization/classification authority. Emergencies, once categorized, shall not be downgraded. An event determined to be an emergency will remain so until the emergency response is terminated.

RL/ORP/PNSO shall determine the criteria to be used to categorize and classify Operational Emergencies based on site-specific criteria. Additional criteria may be based on the DOE *Emergency Management Guide* (DOE 2007). Site contractors shall maintain procedures to ensure recognition and appropriate categorization and classification of emergencies.

4.1.1 Base Program Operational Emergency

A Base Program Operational Emergency shall be declared when events occur that represent a significant degradation in the level of safety at a facility and that require time-urgent response efforts from outside the facility but do not involve the release or potential release of significant quantities of radiological or nonradiological materials. Since Base Program Operational Emergencies do not involve the release of significant quantities of hazardous materials, they do not require further classification (i.e., as Alert, Site Area Emergency, or General Emergency). Such events include health and safety, environmental, security and safeguards, and hazardous biological agent or toxin.

The designated point-of contact (e.g., BED/BW, contractor single point-of-contact), with assistance from Hanford EOC Shift Office personnel, will assess event information to determine if the event should be categorized as a Base Program Operational Emergency. The criteria for categorization of a Base Program Operational Emergency are part of the Abnormal Event criteria, which is contained as a single criteria list within DOE-0223, *Emergency Plan Implementing Procedures.*

Additionally, offsite transportation events involving DOE-owned hazardous materials may be categorized as Base Program Operational Emergencies and, as such, do not require classification.

Notifications regarding Base Program Operational Emergencies shall be made in accordance with subsection 5.1.1.1 of this plan.

4.1.2 Hazardous Material Operational Emergency

If an Operational Emergency represents a specific threat to workers and the public due to the release or potential release of significant quantities of radiological and nonradiological hazardous materials, it shall be classified as either an Alert, Site Area Emergency, or General Emergency, in order of increasing severity.

For facility events, the initial event classification shall be made by the BED or IC in accordance with established procedures.

For nonfacility events (e.g., transportation events, wildland fires), the initial event classification shall be made by the Hanford EOC Shift Office.

The emergency classification shall be reviewed periodically to ensure the classification is commensurate with response activities; however, the classification shall not be downgraded until termination of the event. The criteria used to recognize and classify emergencies, called emergency action levels (EALs), are delineated in subsection 4.4. Hazardous Material Operational Emergency notification requirements are delineated in subsection 5.1.1.2 of this plan.

4.1.2.1 Alert. An Alert shall be declared when events are predicted, are in progress, or have occurred that result in one or more of the following.

(1) An actual or potential substantial degradation in the level of control over hazardous materials (radiological and nonradiological). The radiation dose from any release to the environment of radioactive material or a concentration in air of other hazardous material is expected to exceed criterion corresponding to ten percent of the applicable protective action criterion at the facility boundary; but it is not expected that the applicable protective action criterion will be exceeded at or beyond the facility boundary. (See Table 4-2 for specific protective action criterion exposure levels.)

(2) An actual or potential substantial degradation in the level of safety or security of a facility or activity that could, with further degradation, produce a Site Area Emergency or General Emergency.

Additionally, an Alert represents an event where the entire Hanford Site ERO is required to provide more than event monitoring or minimal assistance to the facility organization.

At an Alert, the Hanford Site ERO shall:

- activate the Hanford EOC and establish communications, consultation, and liaison with offsite agencies;
- initiate predetermined protective actions (e.g., evacuation, sheltering) for onsite personnel and liaison with offsite agencies for the recommendation of predetermined public protective actions;
- continuously assess pertinent information for decision makers, offsite agencies, the public, and other appropriate entities;
- conduct appropriate assessments, investigations, sampling, and monitoring;
- mitigate the severity of the occurrence or its consequences;
- prepare for other response actions should the situation become more serious, including request for appropriate DOE emergency response assets; and
- provide information to the public and the media.

4.1.2.2 Site Area Emergency. A Site Area Emergency shall be declared when events are predicted, in progress, or have occurred that result in one or more of the following situations.

(1) An actual or potential major failure of functions necessary for the protection of workers or the public. The radiation dose from any release of radioactive material or concentration in air from any release of other hazardous material is expected to be equal to or exceed the applicable protective action criterion exposure levels at or beyond the facility boundary but is not expected to be exceeded at or beyond the Hanford Site boundary. (See Table 4-2 for specific protective action criterion exposure levels. Refer to site boundary definition in subsection 1.4.2 of this plan.)

(2) Actual or potential major degradation in the level of safety or security of a facility or process that could, with further degradation, produce a General Emergency.

At a Site Area Emergency, the Hanford Site ERO shall perform the same response actions as for an Alert.

4.1.2.3 General Emergency. A General Emergency shall be declared when events are predicted, in progress, or have occurred that result in the actual or imminent catastrophic reduction of facility safety or security systems with potential for the release of large quantities of hazardous materials (radiological or nonradiological) to the environment. The radiation dose from any release of radioactive material or a concentration in air from any release of other hazardous material is expected to be equal to or exceed the applicable protective action criterion exposure levels at or beyond the Hanford Site boundary. (See Table 4-2 for specific protective action criterion exposure levels. Refer to site boundary definition in subsection 1.4.2 of this plan.)

At a General Emergency, the Hanford Site ERO shall perform the same response actions as for an Alert.

Operational Emergency notification requirements are delineated in section 5.0 of this plan.

4.2 IMPLEMENTATION OF THE RESOURCE CONSERVATION AND RECOVERY ACT CONTINGENCY PLAN[1]

Documentation to meet RCRA contingency plan requirements must be prepared by certain facilities conducting activities regulated under WAC-173-303 (Washington Dangerous Waste Regulations) in accordance with subsection 1.1. These requirements are incorporated into the Hanford Site's overall emergency planning documentation. Therefore, there is not a specific document titled "contingency plan."

For a facility event, the BED/BW shall determine whether the requirements of WAC-173-303-360(2)(d) were met based upon an evaluation and assessment in consultation with their respective site contractor environmental single point-of-contact.

The BED/BW ensures that trained personnel identify the character, source, amount, and areal extent of the release, fire, or explosion to the extent possible. Identification of waste can be made by activities that can include, but are not limited to, visual inspection of involved containers, sampling activities in the field, reference to inventory records, or by consulting with facility personnel. Samples of materials involved in an emergency might be taken by qualified personnel and analyzed as appropriate. These activities must be performed with a sense of immediacy and shall include available information.

The BED/BW shall use the following guidelines to determine if an event has met the requirements of WAC-173-303-360(2)(d):

(1) The event involved an unplanned spill, release, fire, or explosion;

AND

(2a) The unplanned spill or release involved a dangerous waste, or the material involved became a dangerous waste as a result of the event (e.g., product that is not recoverable),

or

(2b) The unplanned fire or explosion occurred at a facility or transportation activity subject to RCRA contingency plan requirements;

[1] Permit requirement: Subsection 4.2, Class 1 Modification 3/31/01

AND

(3) Time-urgent response from an emergency services organization was required to mitigate the event, or a threat to human health or the environment exists.

As soon as possible, after stabilizing event conditions, the BED/BW shall determine, in consultation with the respective site contractor environmental single point-of-contact, if notification to Ecology is needed to meet WAC-173-303-360(2)(d) reporting requirements. If all of the conditions under 1, 2, and 3 are met, notifications are to be made to Ecology. The notification process is delineated in subsection 5.1.2.1. Operational Emergency notifications described in subsection 5.1.1 may also be required as determined on a case-by-case basis by the BED/BW.

If review of all available information does not yield a definitive assessment of the danger posed by the incident, a worst-case condition will be presumed and appropriate protective actions and notifications will be initiated. The BED/BW is responsible for initiating any protective actions based on their best judgment of the incident.

For transportation events on the Hanford Site that are outside of established facility boundaries, it is the responsibility of the Incident Command Organization staff to contact the respective site contractor environmental single point-of-contact for the contractor that initiated the shipment. Transportation incidents do not include events involving passenger vehicles, whether government or privately owned. Based on the event information received from the Incident Command Organization staff and application of the three criteria above, the respective site contractor environmental single point-of-contact shall make the determination whether the requirements of WAC-173-303-360(2)(d) are met. If reporting requirements are met, notifications delineated in subsection 5.1.2.1 shall be performed. Operational Emergency notifications described in subsection 5.1.1 may also be required and are determined on a case-by-case basis by the Incident Command Organization staff.

4.3 ABNORMAL EVENT

There are a variety of events or situations that may occur on the Hanford Site that, while not creating or indicating an emergency condition, may generate public concern or media interest. Local, state, and tribal agencies need timely information regarding these events in order to reassure the public that these situations do not threaten their health or safety.

RL will work with offsite agencies to maintain criteria that will be used to identify these situations, termed Abnormal Event. The criteria will include those events as mutually agreed to by RL/ORP/PNSO and the offsite agencies. Furthermore, any incident categorized as an Operational Emergency, but not further classified as an Alert, Site Area Emergency, or General Emergency, will automatically trigger notifications to offsite agencies as an Abnormal Event. RL/ORP/PNSO will further communicate criteria changes to the site contractors upon acceptance by RL/ORP/PNSO and the offsite agencies.

In addition, it is possible to have transitory events where the EAL criteria were met at some point in the past but no longer exist when the event is reviewed for classification purposes. Such events do not pose a threat to workers or the public since there is no release of hazardous materials, but may generate public concern or media interest and, as such, will be reported under the Abnormal Event criteria.

4.4 EMERGENCY ACTION LEVELS

The EALs are specific, predetermined, observable criteria used to detect, recognize, and determine the classification of Hazardous Material Operational Emergencies identified by the EPHA. The EALs are typically identified as either event-based or symptom-based. The distinction arises from the available methods of detecting and recognizing the initiating conditions of the event. The development of symptom-based EALs is the preferred approach recognizing that there may be some initiating conditions that require an event-based approach. Initiating conditions must be identified specifically in EAL procedures and must be observable and recognizable in a timely manner by responsible personnel.

Facility-specific and nonfacility (e.g., onsite transportation incident, wildland fire, etc.) EALs shall be developed for the spectrum of potential Hazardous Material Operational Emergencies identified by the EPHA and must include protective actions corresponding to each EAL. Additional guidance for developing EALs can be found in the DOE *Emergency Management Guide* (DOE 2007) regarding EPHA and event classification.

The definitions delineated in Table 4-1, used in conjunction with Table 4-2, depict the criteria used at the Hanford Site to classify Hazardous Material Operational Emergency events. The BED/IC or Hanford EOC Shift Office (for nonfacility events) is responsible for making initial classification of emergency events in accordance with RL/ORP/PNSO and site contractor procedures.

Event classification using EALs also forms the basis for notification and participation of offsite organizations and for determining what and when protective actions will be implemented. As such, EALs and related information must be consistent and integrated with the emergency plans and procedures of offsite Federal, tribal, state, and local organizations and should be reviewed annually, as appropriate by all parties involved in response activities.

> NOTE: It is possible when comparing event indications to an EAL set to discover that the EAL criteria were previously met, but those conditions no longer exist. If there is no threat to workers or the public then the incident may be a transitory event as delineated in subsection 4.3.

4.4.1 Symptom-Based Emergency Action Levels

Symptom-based EALs are dependent on one or more observable conditions or parameter values (i.e., symptoms) that are measurable over some continuous spectrum. The EALs should be the same indicators as those used to monitor routine facility operation. The level of severity indicated by these symptoms is directly related to the failure of or challenge to the facility's hazardous materials confinement barriers, other symptoms or events that occur simultaneously, and the ability of personnel to gain control and bring the indicator(s) back to safe levels. The resulting facility-specific EALs shall consist of specific quantified values (e.g., alarms and control instrument readings) that require no additional interpretation by the user. By comparing the observed value to the EALs in event classification procedures, the correct Hazardous Material Operational Emergency class can be readily determined.

4.4.2 Event-Based Emergency Action Levels

Event-based EALs address the occurrence of discrete events with potential safety significance. The level of severity is determined by the degree to which hazardous material confinement barriers are either failed or challenged as a result of the event, and the ability of personnel to gain control of the situation. Event classification requires the interpretation of one or more qualitative conditions or discrete observable indicators to determine if the existing situation matches the descriptions contained in the event classification procedure.

4.4.3 Use of Emergency Action Levels

On determination that an event has occurred at or affecting a Hanford Site facility, the BED/IC or Hanford EOC Shift Office (for nonfacility events) shall promptly assess the conditions, compare the indications to the EAL set, and determine the appropriate Hazardous Material Operational Emergency classification. Then, immediate protective and mitigative actions, activation of the emergency response organization, and appropriate notifications are carried out.

The Hanford EOC is responsible for ensuring that the emergency has been classified appropriately by the BED/IC or Hanford EOC Shift Office (for nonfacility events) by reviewing the appropriate EAL to determine that the correct emergency classification has been selected.

Table 4-1

Summary of Hazardous Material Operational Emergency Classifications

OPERATIONAL EMERGENCY CLASSIFICATION	FACILITY OR PROCESS EVENT	ONSITE TRANSPORTATION EVENT
Alert	Actual or potential substantial degradation of level of control over hazardous material (radiological or nonradiological). Releases are not expected to exceed applicable protective action criterion levels at or beyond the facility boundary (see Table 4-2). OR Actual or potential substantial degradation in the level of safety or security that could, with further degradation, produce a Site Area Emergency or General Emergency.	Actual or potential substantial degradation of the safety of the shipment. Protective actions[1] are only expected for personnel engaged in cleanup, recovery and investigation.
Site Area Emergency	Actual or potential major failures of functions necessary for the protection of workers or the public. Releases could exceed applicable protective action criterion levels onsite but not offsite (see Table 4-2). OR Actual or potential major degradation in the level of safety or security that could, with further degradation, produce a General Emergency.	Actual or potential major reduction in safety of a shipment. Protective actions are taken beyond the exclusion zone[2] onsite but not at nearest site boundary.
General Emergency	Actual or imminent catastrophic reduction of facility safety or security systems with potential for the release of large quantities of radiological or nonradiological materials to the environment. Releases reasonably expected to exceed applicable protective action criterion levels offsite (see Table 4-2).	Actual or imminent catastrophic reduction in safety of a shipment. Protective actions are recommended beyond the site boundary.

[1] Protective actions for transportation incidents will be determined by the IC based on the Emergency Response Guidebook (ERG), latest edition.

[2] The exclusion zone is defined as the immediate vicinity of the accident.

Table 4-2

Hanford Site Hazardous Material Operational Emergency Classification Criteria

ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
≥10% of PAC[1]-2 & <PAC-2 at the facility boundary[2]	≥PAC-2 at the facility boundary	≥PAC-2 at the site boundary
≥100 mrem TED[3] at the facility boundary	≥1 rem TED at the facility boundary	≥1 rem TED at the site boundary

[1] For chemicals, the Protective Action Criteria (PAC), listed in order of preference, must be used: One hour Acute Exposure Guideline Levels promulgated by the EPA; Emergency Response Planning Guidelines published by the American Industrial Hygiene Association; and Temporary Emergency Exposure Limits developed by DOE.

[2] The facility boundary is defined as a distance of 100 meters from the release point unless otherwise justified in the EPHA.

[3] The total effective dose (TED) includes the summation of the doses delivered during the early phase of the emergency from plume submersion, ground/sky shine, and inhalation (see section 2.2 of EPA 400-R-92-001). The EPHA and Authorization Basis exposure pathways and times may be different reflecting a difference in purpose of the two sets of analyses.

5.0 NOTIFICATIONS AND COMMUNICATIONS

5.1 NOTIFICATIONS

Notifications are made for events on the Hanford Site according to the event category (i.e., Operational Emergency and Significance Category); for environmental events, including those that meet the RCRA contingency plan implementation criteria; and for events that may generate public concern or media interest, termed Abnormal Events. Notifications shall be made in order of urgency with Operational Emergency (Hazardous Material Operational Emergency only) notifications performed first; Environmental notifications (including those that meet RCRA contingency plan implementation requirements) performed second; and Abnormal Event (including Base Program Operational Emergency) and Significance Category notifications performed last.

Contractors shall maintain procedures to ensure that notification and reporting requirements are made in accordance with DOE O 151.1C and DOE O 232.2, *Occurrence Reporting and Processing of Operations Information*; applicable Federal, state, or local requirements; and special agreements with offsite agencies or tribal governments.

The Significance Category occurrences are used solely for reporting versus immediate action purposes. Notifications and written reports of incidents meeting occurrence reporting criteria are made to DOE-HQ and also to offsite entities as requested. RL shall maintain a listing of offsite agencies that are to receive the occurrence reports. While occurrence reporting is not addressed in this plan, additional information regarding Significance Category reporting is delineated in DOE O 232.2. Offsite transportation events involving DOE-owned hazardous materials shall be reported in accordance with DOE O 151.1C.

RL/ORP/PNSO shall monitor the notification process to ensure notifications of applicable emergency events as necessary or appropriate.

5.1.1 Operational Emergency Notifications[1]

Prompt and accurate emergency notifications are essential to mitigating consequences and for protecting the health and safety of workers and the public. For Operational Emergencies, procedures shall be established and maintained to provide prompt initial notification to workers and emergency response personnel and organizations, including appropriate offsite agencies, under the most limiting set of conditions.

For Operational Emergencies that also meet RCRA contingency plan implementation criteria in accordance with subsection 4.2, personnel shall perform notifications in accordance with subsection 5.1.2.

5.1.1.1 Base Program Operational Emergency Notifications. Site contractors shall ensure that their designated points-of-contact (e.g., BED/BW, contractor single point-of-contact) report events that potentially meet Base Program Operational Emergency criteria to the Hanford EOC Shift Office immediately.

[1] Permit requirement: Subsection 5.1.1, Class 1 Modification 3/31/01

The designated point-of-contact, with assistance from Hanford EOC Shift Office personnel, will assess the event information to determine if the event should be categorized as a Base Program Operational Emergency. If the event meets the Base Program Operational Emergency criteria, the Hanford EOC Shift Office shall notify the DOE-HQ Operations Center within 30 minutes following categorization and the offsite agencies immediately following as part of the Abnormal Event notification delineated in subsection 5.1.3.

The same notification requirements apply to offsite transportation events involving DOE-owned hazardous materials. The Hanford EOC Shift Office shall determine event categorization and initiate the required notifications.

Criteria for determining Base Program Operational Emergencies are delineated in subsection 4.1.1 of this plan.

5.1.1.2 Hazardous Material Operational Emergency Notifications.[2] Hazardous Material Operational Emergency notifications shall be made quickly and accurately to:

- augment the site and facility operating staff with personnel in designated response roles to respond to the emergency;
- activate emergency centers;
- facilitate public notification by offsite authorities and agencies that have decision-making authority for directing protective actions (e.g., evacuation of local areas); and
- protect site and facility personnel and emergency workers through the provision of information necessary to implement accountability and protective actions such as sheltering, decontamination, and evacuation.

The Hazardous Material Operational Emergency notification process is outlined in Figure 5-1.

5.1.1.2.1 Initial Onsite and Offsite Notifications. The initial event classification (Alert, Site Area Emergency, or General Emergency per criteria delineated in subsections 4.1.2.1, 4.1.2.2, and 4.1.2.3 respectively) shall be made by the BED/IC or Hanford EOC Shift Office (for nonfacility events) in accordance with established procedures.

The BED/IC or Hanford EOC Shift Office (for nonfacility events) shall initiate immediate notifications via the 911 emergency number to request emergency response assistance and activate applicable components of the Hanford Site Emergency Alerting System, which will provide additional onsite notifications and activate the Hanford EOC. The BED/IC shall also notify onsite personnel within their geographic area of responsibility via facility sirens or plant telephone so that they can take appropriate protective actions.

Additionally, the BED/IC is responsible for ensuring that pertinent information is provided to the Hanford EOC Shift Office, in accordance with established procedures, in order to complete the Hanford Emergency Notification Form (Figure 5-2) and make offsite notifications.

[2] Permit requirement: Subsection 5.1.1.2, Class 1 Modification 9/30/99

Figure 5-1

Hazardous Material Operational Emergency Notifications

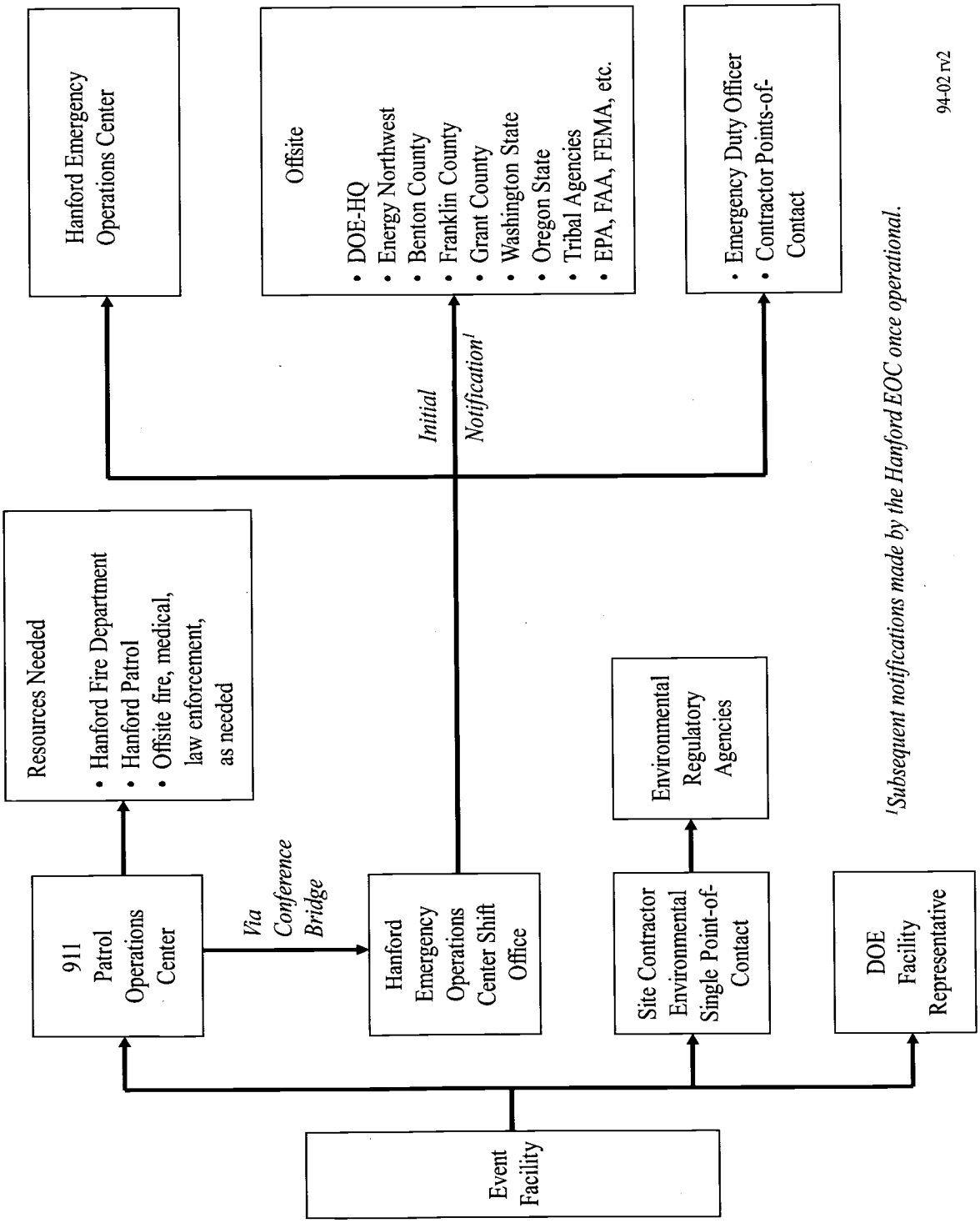


Figure 5-2

Hanford Emergency Notification Form

RL-F-5540.1
(REV 4)
(09/12)

U.S. DEPARTMENT OF ENERGY
HANFORD EMERGENCY NOTIFICATION FORM No. _____

1 NOTIFICATION PROVIDED BY: Name: _____ Phone: (509) _____

2 AREA AND FACILITY: _____ 3 TYPE EVENT: a. ☐ Emergency b. ☐ Exercise/Drill

4 CLASSIFICATION/STATUS: a. ☐ Initial Classification b. ☐ Reclassification c. ☐ Correction
d. ☐ PAR Change/Addition e. ☐ Information f. ☐ Termination

5 EMERGENCY CLASSIFICATION LEVEL AND OFFSITE PROTECTIVE ACTION RECOMMENDATIONS:

AREA	a. ☐ ALERT	b. ☐ SITE AREA EMERGENCY	c. ☐ GENERAL EMERGENCY
☐ 100K	None	Evacuate Columbia River from Vernita Bridge to White Bluffs Ferry Landing.	• Evacuate Columbia River from Vernita Bridge to White Bluffs Ferry Landing. • Evacuate Section 5, east of Hwy. 24.
☐ 200E	None	None	• Evacuate Columbia River from Vernita Bridge to Leslie Groves Park. • Evacuate Sections 5, 6, and 7.
☐ 200W[1]	None	None	None
☐ 200W[2]	None	Evacuate Columbia River from Vernita Bridge to White Bluffs Ferry Landing.	• Evacuate Columbia River from Vernita Bridge to White Bluffs Ferry Landing. • Evacuate Sections 5 and 7.
☐ 300	None	Evacuate Columbia River from White Bluffs Ferry Landing to Leslie Groves Park.	• Evacuate Columbia River from White Bluffs Ferry Landing to Leslie Groves Park. • Evacuate 2.2 mile radius.
☐ Other	None	None	Evacuate Columbia River from Vernita Bridge to Leslie Groves Park.

[1]For emergencies at U Plant, REDOX, 222-S, 224-T, 283W, or 200W Tank Farms.
[2]For emergencies at PFP, LLBG, CWC, T Plant, or WRAP.

6 TYPE OF INCIDENT:

a. Security Incident Yes ☐ No ☐

EAL No.: DOE-0223, RLEP 1.0, Appendix 1- _____ Table _____

Description of Incident: _____

7 RELEASE TO THE OUTSIDE ENVIRONMENT INFORMATION:

a. ☐ No Release (No indicators)
b. ☐ Unknown (Indicators of possible release, but not confirmed)
c. ☐ Confirmed Release (Visible or instrument indication of hazardous release)
- Estimated Start Time of Release: _____
☐ Airborne ☐ Spill ☐ to Columbia River
d. ☐ Release Terminated - Time: _____

8 METEOROLOGICAL DATA:

Wind Speed _____ mph
Wind Direction: from _____
Precipitation: ☐ Yes ☐ No
Stability Class:
A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐

9 PROGNOSIS OF SITUATION: a. ☐ Unknown b. ☐ Stable c. ☐ Escalating d. ☐ Improving

10 ADDITIONAL OFFSITE PROTECTIVE ACTION RECOMMENDATIONS:

_____

APPROVED: _____ DATE: _____ TIME: _____

Within 15 minutes from declaration of an emergency event classified as an Alert, Site Area Emergency, or General Emergency by the BED/IC or Hanford EOC Shift Office (for nonfacility events), the Hanford EOC Shift Office shall make offsite notifications to:

- DOE-HQ Operations Center;
- Benton County, Franklin County, Grant County, Washington State, and Energy Northwest via the DOE Crash Alarm Telephone System (hot line); and
- Oregon State.

Subsequently, the Hanford EOC Shift Office shall also make onsite notifications to the:

- PNNL single point-of-contact;
- CHPRC single point-of-contact;
- WRPS single point-of-contact;
- WCH single point-of-contact;
- BNI single point-of-contact; and
- HPMC single point-of-contact.

Within 30 minutes of the event declaration, the Hanford EOC Shift Office Duty Officer shall notify, as applicable to the event, other offsite agencies that may have personnel working in remote locations of the Hanford Site (e.g., personnel at locations without alarm or siren capabilities). All other notifications shall be made as soon as practical. The Hanford EOC Shift Office shall maintain a list of agencies to be notified.

5.1.1.2.2 Reclassification Notifications. Reclassification of rapidly escalating emergencies shall be made by the BED/IC or Hanford EOC Shift Office (for nonfacility events) until the Hanford EOC is declared operational. The BED/IC shall provide immediate appropriate protective action notification to onsite personnel within their respective geographic area of responsibility and also provide notification to the POC and Hanford EOC Shift Office via the 911 emergency number regarding the reclassification. The Hanford EOC Shift Office then shall notify the offsite emergency response organizations of the event reclassification.

Upon declaration of their operability and completion of an event turnover between the IC/BED and Site Emergency Director, the Hanford EOC shall have the responsibility for reclassifying or terminating emergencies, disseminating additional protective action decisions to onsite personnel, and performing offsite notifications that include protective action recommendations.

The same offsite notification requirements listed above apply anytime an event is reclassified.

5.1.1.2.3 U.S. Department of Energy Emergency Response Assets. It is the responsibility of the Hanford EOC to forward any requests for national DOE emergency response assets to the Regional Response Coordinator. A description of each asset is delineated in subsection 3.2.1 of this plan. Response to events requiring DOE emergency assistance shall be directed to appropriate DOE-HQ elements. DOE responsibilities for emergency assistance are delineated within interagency Federal response and recovery plans, Executive Orders, and/or international agreements. Specific notifications for response to a request for radiological assistance are described in DOE/RL-92-49, *U.S. Department of Energy Radiological Assistance Program Response Plan Region 8.*

5.1.1.2.4 Reports. Following termination of emergency response, and in conjunction with the occurrence reporting process per DOE O 232.2, the facility shall submit a final report on the emergency to the Occurrence Reporting and Processing System. The respective RL/ORP/PNSO Manager shall designate a lead evaluator to conduct an evaluation and submit a final report on the emergency response. Upon approval by the respective RL/ORP/PNSO Manager, the final report shall be submitted to the DOE-HQ Director, Office of Emergency Operations.

All reports and releases shall be reviewed for classified or unclassified controlled information (e.g., Unclassified Controlled Nuclear Information) prior to being provided to personnel not authorized access to such information, entered into data bases not authorized for such information, or transmitted using non-secure communications equipment.

5.1.1.3 DOE-HQ Operations Center Emergency Notification Information. At a minimum, emergency notification to the DOE-HQ Operations Center shall consist of a phone call providing as much information as is known at the time. The same information shall be provided by e-mail or a fax either immediately prior to or following the phone call. Information for initial notification includes as much as possible of the following:

- that an Operational Emergency has been declared and, if appropriate the classification of the emergency;
- the description of the emergency;
- the date and time the emergency was discovered;
- the damage and casualties;
- whether the emergency has stopped other facility/site operations or program activities;
- the protective actions taken and/or recommended;
- the notifications made;
- the weather conditions at the scene of the emergency;
- the level of any media interest at the Hanford Site; and
- Hanford point-of-contact information.

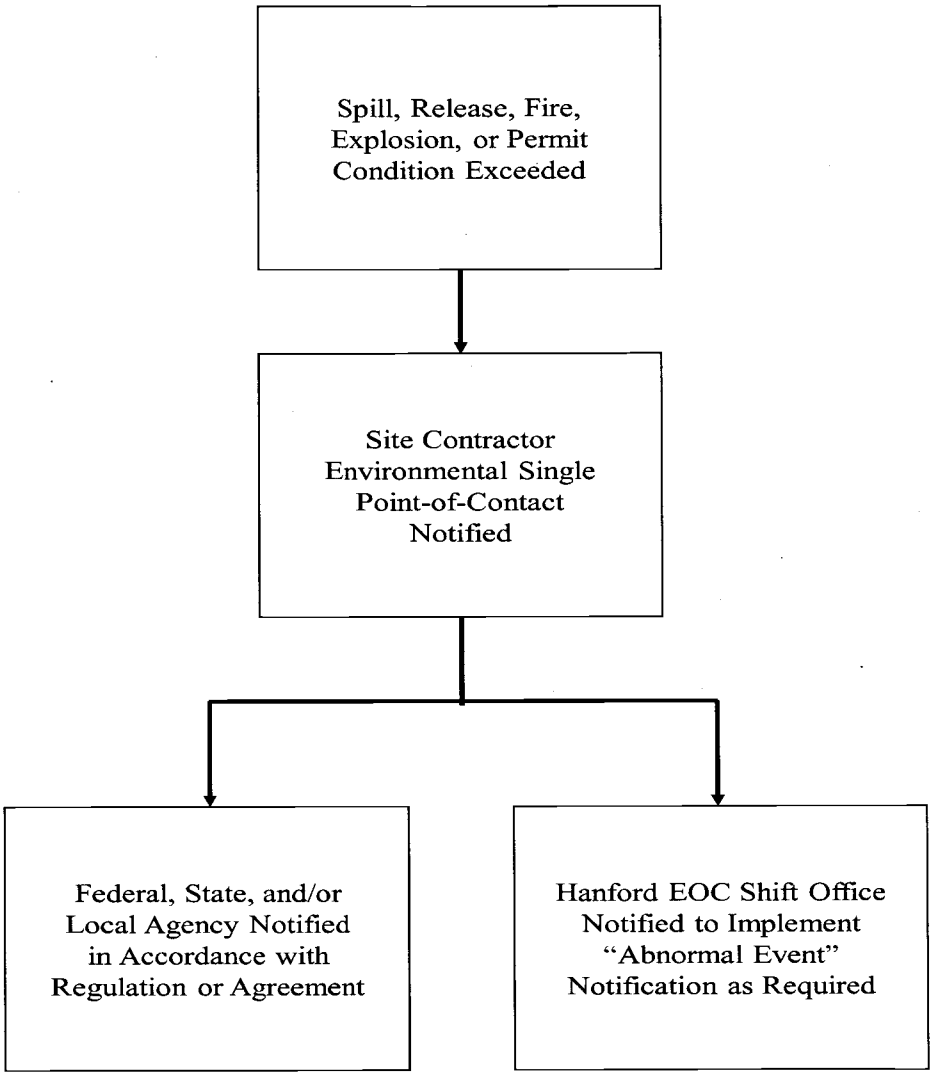
5.1.2 Environmental Notifications[3]

There are numerous environmental notifications that must be made including those that meet the RCRA contingency plan implementation requirements. These notifications are made either verbally or in writing, dependent on the event type. In many cases, notification requirements are based upon the quantity and location of a spill or release.

Site contractors shall maintain procedures to ensure implementation of environmental notifications in accordance with Federal, state or local requirements and agreements. Since events relating to spills or releases usually do not meet criteria for a DOE Order classifiable emergency (i.e., Alert, Site Area Emergency, or General Emergency), contractors must ensure that environmental notification procedures are consistent with the environmental notification process depicted in Figure 5-3.

[3] Permit requirement: Subsection 5.1.2, Class 1 Modification 3/31/01

Figure 5-3



94-02r2

5.1.2.1 Initial/Verbal Notifications.[4] For any incident which involves a spill, release, fire, explosion, or environmental permit exceedence, the respective site contractor environmental single point-of-contact shall be notified to determine applicability of requirements and perform appropriate environmental notifications. The respective site contractor environmental single point-of-contact shall notify the appropriate Federal, state and/or local agencies. Additionally, the Hanford EOC Shift Office shall be notified in order to determine if an Abnormal Event notification is also required as delineated in subsection 5.1.3.

5.1.2.2 Written Reports.[5] The respective site contractor shall develop any necessary written reports and submit to RL/ORP/PNSO for review and concurrence. Written reports shall be submitted to the appropriate Federal, state or local agencies within the required time frames.

5.1.2.3 Resumption of Operations.[6] The respective site contractor environmental single point-of-contact shall notify the appropriate Federal, state and/or local agencies that the facility is in compliance with cleanup activities described in subsection 9.2.3 before operations are resumed.

5.1.3 Abnormal Event Notifications

There are a variety of events or situations that may occur on the Hanford Site that, while not creating or indicating an emergency condition, may generate public concern or media interest. Local, state and tribal entities need timely information on these events in order to reassure the public that these situations do not threaten their health or safety.

RL shall maintain a process to advise offsite entities of situations - termed Abnormal Event - which may generate public concern or media interest. RL will work with appropriate offsite entities to maintain the criteria to be used to initiate the Abnormal Event notifications, the notification procedure, and a list of entities to be notified. Additionally, RL shall notify the site contractors when criteria change. The Abnormal Event notification process is further delineated in DOE-0223, *Emergency Plan Implementing Procedures*.

Site contractors are responsible to ensure that events meeting the Abnormal Event notification criteria at their respective facilities are promptly reported to the Hanford EOC Shift Office. The Hanford EOC Shift Office will initiate Abnormal Event notifications when notified of a situation which meets the agreed upon criteria. Additionally, offsite agencies will notify the Hanford EOC Shift Office if public or media inquiries indicate the need to initiate notifications.

5.2 COMMUNICATIONS

Effective communications methods shall be established between event scene responders, emergency managers, and response facilities. Provisions shall also be established for continuing effective communication (i.e., back up means of communication) among the response organizations throughout an emergency. To minimize the potential for confusion in disseminating information, the simplest, most direct system for communications should be established.

The communications system shall provide for designated point(s) of contact for receipt of notifications; compatibility with other Federal, tribal, state, and local response organizations; and rapid dissemination of information received to provide for timely and effective response actions.

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[4] Permit requirement: Subsection 5.1.2.1, Class 1 Modification 12/31/12

[5] Permit requirement: Subsection 5.1.2.2, Class 1 Modification 12/31/08

[6] Permit requirement: Subsection 5.1.2.3, Class 1 Modification 9/30/99

5.2.1 Telephone Number 911[7]

The Hanford Site emergency number for requesting emergency response is 911. This number shall be monitored and recorded at all times by the Hanford Patrol at the POC. The 911 emergency number shall be called when emergency conditions exist that requires responses from the Hanford Patrol or Hanford Fire (including ambulance or the Hazardous Materials Response Team), or whenever there is any doubt as to the conditions present.

Where cellular telephone is the only method of communication, onsite emergency response may be requested by calling the POC at 373-0911.

5.2.2 Telephone Number 373-3800

This is the 24-hour business telephone number for the POC. The 24-hour emergency telephone number at the POC to obtain assistance with offsite transportation events involving DOE-owned hazardous materials shipments is 1-888-766-0771.

5.2.3 Telephone Number 376-2900

This is the Hanford Site telephone number for reporting occurrences to the Hanford EOC Shift Office in accordance with occurrence reporting requirements. This number shall be monitored at all times by Hanford EOC Shift Office personnel.

5.2.4 Site Contractor Environmental Single Point-Of-Contact

Each site contractor shall maintain a communications mechanism (e.g., telephones, pagers) in order to perform the notifications described in subsection 5.1.2.1.

5.2.5 Hanford Site Emergency Alerting System

The Hanford Site Emergency Alerting System integrates automated notification components into an overall site-wide notification system. The intent of the Hanford Site Emergency Alerting System is to provide a means to contact personnel on the site regardless of their location using the communication components listed below.

Outdoor warning sirens may be activated to communicate area-wide protective actions to persons that may be located outdoors. When sirens are activated, an announcement will be made providing verbal instructions followed by a wavering siren for take cover or a steady siren for evacuation.

Message reader boards located at various locations around the Hanford Site may be used to notify personnel traveling on the site of an emergency condition or extraordinary hazardous weather condition, and will instruct commuters to tune to radio station 530 AM for further detailed instructions.

The 530 AM radio station may be used to communicate emergency information to those that may be traveling onto the Hanford Site. The radio station will be used in conjunction with the reader boards to disseminate emergency information at each of the major exit and egress areas of the site.

Computer emergency messaging may be used to provide emergency notification to site workers via personal computer work stations connected to the Hanford Local Area Network.

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[7] Permit requirement: Subsection 5.2.1, Class 1 Modification 6/30/10

The telephone notification system may be used to notify individual employees, via a recorded message on personal work telephones, regarding event information and actions employees are expected to take. This system is designed to provide notification to employees who may be indoors, but away from a computer work station. Furthermore, the telephone notification system may also be used to notify Hanford EOC response personnel by calling work or home telephones.

Tone alert radios may be used to notify workers assigned to remote locations on the Hanford Site where telephones or computers are not available.

Hanford Site pagers may provide notification to personnel who have been assigned to an associated group page for the Hanford Site area that is affected by the emergency event. This system may also be used to inform personnel with associated group pagers whose work requires routine travel between areas or those who may be working in remote locations that may be affected by the event.

While not a component of the automated Hanford Site Emergency Alerting System, two-way commercial radios may be used to receive an emergency event notification tone, which will be followed by an emergency message providing protective action information, simultaneously across the Hanford Site. Typically, these radios will be used by site employees working outdoors in remote locations.

5.2.6 General Delivery Computer Message

General delivery messages may be used to disseminate information to Hanford Site employees via personal computer work stations connected to the Hanford Local Area Network. General delivery messages are also sent to DOE and site contractor communications departments that are not connected to the Hanford Local Area Network.

5.2.7 Radios

Multiple radio systems and frequencies are available for emergency communications. A repeater station provides site-wide communications capability.

Radio transmissions, as well as mobile telephone communications, are conducted over frequencies monitored not only by Hanford Site personnel, but also by the general public. Extra precautions shall be taken to prevent communication of sensitive information during regular and emergency communications (such as names and speculative information).

5.2.8 Incident Command Post Communications

The ICP shall have communications to facilities outside of the affected event scene. Methods of communication include the use of:

- commercial telephone (adjacent buildings should be identified where commercial telephones are available);
- cellular telephone; and
- portable and/or fixed radio with capability to transmit on the Hanford Site safety network, Hanford Patrol, or Hanford Fire frequencies.

5.2.9 Hanford Emergency Operations Center Communications

The Hanford EOC shall have appropriate methods of communications including backup communications. These may include:

- commercial telephone;
- cellular telephone; and
- portable and/or fixed radio with capability to transmit on the Hanford Site safety network, Hanford Patrol, or Hanford Fire frequencies.

Additionally, the following two dedicated networks will be maintained.

- The DOE Crash Alarm Telephone System which establishes a conference bridge with:
  - Energy Northwest;
  - Benton County;
  - Franklin County;
  - Grant County;
  - Washington State;
  - Oregon State;
  - Hanford POC;
  - Hanford EOC Shift Office; and
  - Hanford EOC.

  NOTE: This system will be used by the Hanford EOC Shift Office to make initial notifications of emergency classification and PARs, and by the Hanford EOC to make subsequent notifications of emergency classifications or reclassification, PARs, and emergency termination.
- The ERO Communications Line that establishes a conference bridge and is the primary method to communicate event information between the Hanford EOC and the ICP.

5.2.10 Secure Communications

Secure communications in the Hanford EOC shall be accomplished, as necessary, using the Station Terminal Equipment (STE) telephone system. This system enables establishment of a secure, closed network for voice communications.

5.2.11 Emergency Signals

Table 5-1 lists the standard Hanford Site emergency signals, their meanings, and normal response actions. Supplementary protective action information may be provided by use of additional Hanford Site Emergency Alerting System components such as the telephone notification system, computer emergency messaging, and tone alert radios.

Table 5-1

Standard Emergency Signals[8]

SIGNAL	MEANING	ACTIONS
Gong/electronic chime	Fire	Vacate building; proceed to staging area.
Steady tone on whistle, Klaxon horn, or siren	Area evacuation	Vacate building; proceed to evacuation staging area. Personnel in vehicles shall proceed to the nearest facility staging area and report to the staging area manager.
Wavering siren or short blasts on whistle, klaxon horn or siren	Take cover (shelter)	Proceed to shelter or stay indoors. Close all exterior doors, turn off all intake ventilation (as applicable), and notify manager of whereabouts. Personnel in vehicles shall proceed to the nearest occupied facility and report to facility management.
AH-00-GA horn (howler) or flashing blue light (in high noise areas)	Nuclear criticality	Run at least 100 feet from building; proceed to staging area.
Red light with ringing bell	Air contamination	Stop work activities; immediately exit the area; notify Radiological Control personnel.
NOTE: Supplementary protective action information may be provided as necessary by use of additional Hanford Site Emergency Alerting System components such as the telephone notification system, computer emergency messaging, and tone alert radios.		

[8] Permit requirement: Table 5-1, Class 1 Modification 12/31/08

6.0 CONSEQUENCE ASSESSMENT

Initial and continuous consequence assessments are necessary to protect workers, the public, and the environment during a declared emergency. Estimates of onsite and offsite consequences of actual or potential releases of hazardous materials shall be computed and assessed in a timely manner throughout the emergency.

Consequence assessments evaluate and interpret radiological or other hazardous materials measurements or other information to provide a basis for decision-making. As such, consequence assessments shall be integrated with emergency classification and protective action decision-making; incorporated with facility and field indications and measurements; and coordinated with offsite agencies. In this context, planning includes developing and preparing postulated scenarios for onsite and offsite consequence projections for development of PARs, and identifying personnel and resources to provide an effective response.

6.1 CONSEQUENCE DETERMINATION

Provisions shall be established to adequately assess the potential or actual onsite and offsite consequences of an emergency. Hanford Site consequence assessment activities shall:

- be timely throughout the emergency;
- be integrated with the event classification and protective action process;
- incorporate monitoring of specific indicators and field measurements; and
- be coordinated with offsite agencies.

The airborne release pathway typically represents the most time-urgent situation, requiring a rapid, coordinated response.

6.1.1 Meteorological Monitoring

Representative collection of meteorological data currently is required to support environmental monitoring activities for ensuring that Hanford Site operations involving airborne releases of hazardous material comply with applicable Federal, state, and local environmental protection laws and regulations, executive orders, and internal department policies. Characterization of atmospheric transport and diffusion conditions (e.g., wind speed, wind direction, stability) in the vicinity of the Hanford Site facilities is essential for consequence assessments of airborne releases of hazardous materials. Other meteorological conditions (e.g., precipitation, temperature, and atmospheric moisture) are important to environmental surveillance activities (both routine and nonroutine) such as air concentration and ground deposition monitoring.

6.1.2 Event Scene Consequence Assessments

These assessments will be conducted at the event scene by the ICP staff. The ICP staff should continuously evaluate the environmental conditions for inhabitants of the command post and relocate the command post as necessary.

6.1.3 Area Consequence Assessments

It is necessary to evaluate the consequences of releases of radioactive and nonradioactive materials at locations beyond the immediate vicinity of the event scene. This is typically within a defined Hanford Site area (e.g., 100K, 200E, 200W, 300 Area) and includes all areas outside of the event scene and within the immediately affected area. The types of evaluations that should be conducted are those that affect the ability of operations staff to safely shutdown operational facilities and those that affect the ability of residents to take protective actions. This activity typically is performed by the UDAC for impacts to other Hanford Site populations.

6.1.4 National Atmospheric Release Advisory Center

The NARAC capacity shall be used as the backup to the primary source of consequence assessment, and as a source for corroborating or confirming consequence assessment information. Meteorological data and information on source terms for actual or potential releases of hazardous materials to the atmosphere is available to NARAC to facilitate near real-time computations.

6.2 COORDINATION OF CONSEQUENCE ASSESSMENT RESULTS

The UDAC has the primary responsibility for overall onsite and offsite consequence assessment for the Hanford Site. The UDAC staff shall continuously assess event conditions that may include:

- release source terms;
- mitigation efforts;
- onsite and offsite field team data; and
- meteorological conditions.

Modeling tools shall be used to predict the consequences of a release of hazardous materials. The results of these calculations are shared with onsite and offsite emergency responders and appropriate PARs are disseminated to affected individuals.

RL shall make provisions for representatives from Washington and Oregon to participate in the consequence assessment, field team coordination, and the offsite PAR development process.

7.0 PROTECTIVE ACTIONS AND REENTRY

An important part of the emergency management program at the Hanford Site is the planning for physical measures that may be needed to protect workers and the public from adverse health effects resulting from the release of hazardous materials. The initial response to any emergency will be to immediately protect the health and safety of persons in the immediate area. Identification of released material is essential to determine appropriate protective actions. Containment, treatment, and disposal assessment will be the secondary responses. This section describes the areas that may be impacted and the protective actions that may be needed; and ensures that reentry activities are properly and safely accomplished, and recovery and post-emergency activities commence properly.

7.1 EMERGENCY PLANNING ZONES

Emergencies at site facilities may require actions only on the Hanford Site or may affect offsite areas. The Hanford Site emergency management program uses the EPZ concept to focus emergency planning activities. The EPZs are designated areas, based upon EPHAs, in which predetermined protective actions may be required.

The extent of a planning zone is based on the distance that a particular substance could expect to be dispersed in a particular form. The two types of exposure "pathways" for both radiological and nonradiological hazardous materials are delineated below.

- Plume Exposure Pathways: Exposure to a passing cloud, or plume, of the substance resulting in direct contact of the substance with the exterior of the body or through inhalation of the substance.

- Ingestion Exposure Pathway: Dispersal of the substance to various internal organs following the ingestion (eating or drinking) of contaminated foodstuffs or water.

RL shall develop EPZs for the Hanford Site, as determined necessary by EPHAs, and submit them to affected states and counties for their use in emergency planning. Additionally, approved EPZs shall be submitted to the DOE-HQ Director, Office of Emergency Operations and the Program Secretarial Officer.

7.1.1 Plume Exposure Pathway Emergency Planning Zones

The extent of the plume exposure EPZ for radiological hazards is based upon the potential for exposure by the:

- inhalation exposure from the passing radioactive plume; and/or
- whole body external exposure to beta or gamma radiation from the plume and from deposited radioactive material.

The extent of the plume exposure EPZ for nonradiological hazardous materials is based upon the potential for exposure by:

- inhalation from the plume; and/or
- skin or eye contact with the plume.

Either of these exposure routes could dominate, depending upon the toxicological and physicochemical characteristics of the hazardous material.

The plume exposure pathway EPZ includes the area of the hazardous material spill, areas immediately surrounding the spill or release, and downwind areas projected to receive significant concentrations of hazardous materials. Plume exposure EPZs have been determined for each facility based on the radiological, nonradiological, or mixed (radiological and nonradiological) hazards. Area plume exposure EPZs (i.e., 100, 200, and 300 Areas) are determined by the largest facility EPZ in that area. The plume exposure EPZs are described in Table 7-1.

Figure 7-1 shows the plume exposure EPZs for geographical areas on the Hanford Site with potential offsite consequences.

Table 7-1

Hanford Site Area Plume Emergency Planning Zones

LOCATION	TYPE OF HAZARD DETERMINING EPZ SIZE	RADIUS OF ZONE[1]
100K Area	Radiological	8.0 kilometers/5.0 miles
200W Area	Radiological	16.0 kilometers/10.0 miles
200E Area	Radiological	5.0 kilometers/3.1 miles
300 Area	Radiological	3.5 kilometers/2.2 miles

[1]For the purposes of EPZ definition, the receptor location is defined as the south and/or west shore of the Columbia River.

7.1.2 Ingestion Exposure Pathway Emergency Planning Zone

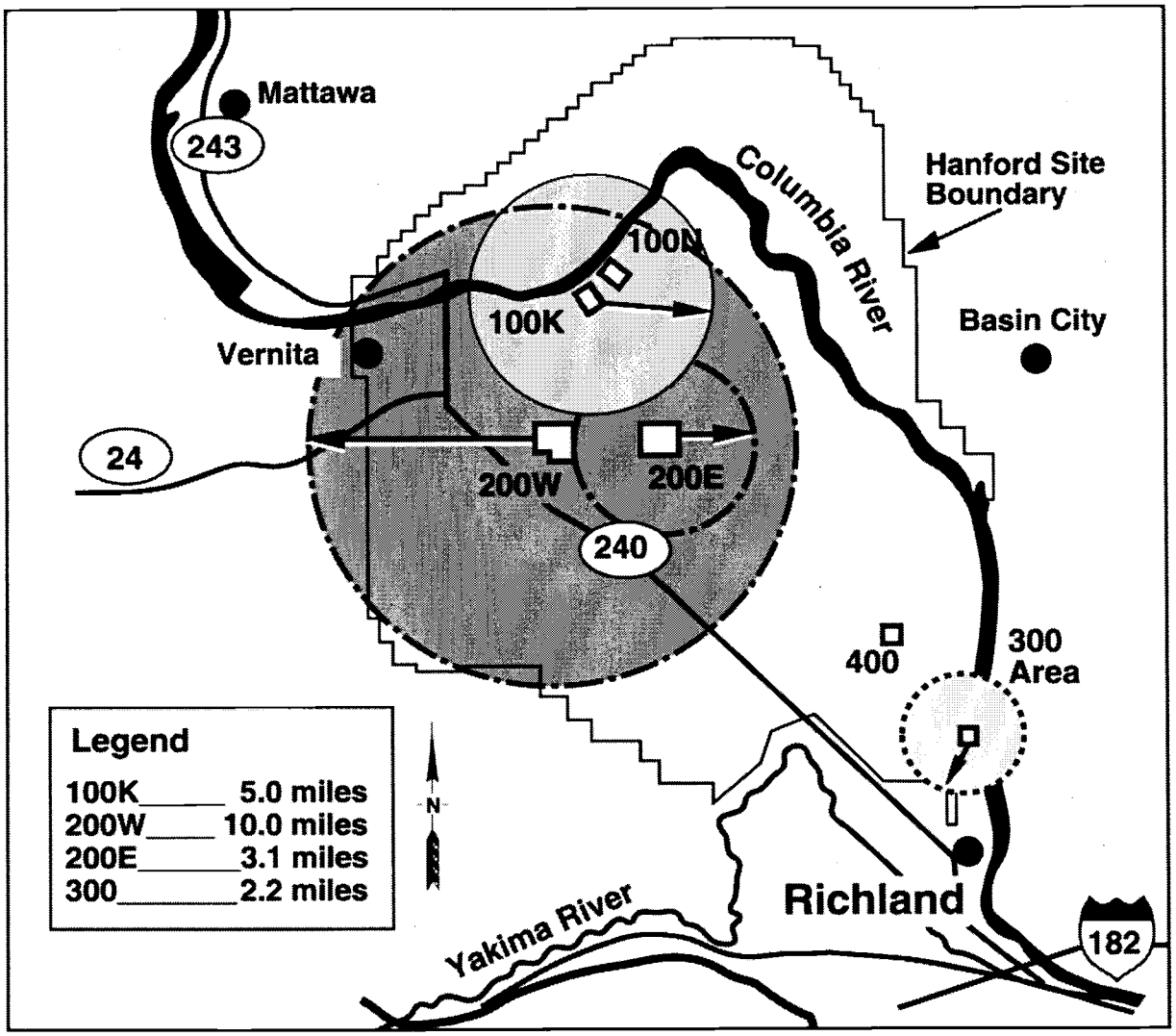
The ingestion exposure pathway EPZ for radiological and nonradiological incidents involving Hanford Site facilities corresponds to the 50-mile (80-kilometer) EPZ for Energy Northwest (Columbia Generating Station). The principal exposure from this pathway would be from ingestion of contaminated water or foods such as milk, fresh vegetables, or aquatic foodstuffs. Facility, onsite, and offsite populations may be subject to exposure through the ingestion exposure pathway. The ingestion exposure EPZ is shown on Figure 7-2.

Offsite protective actions within the ingestion exposure pathway EPZ are the responsibility of the counties and the states. The states of Washington and Oregon are responsible for developing and applying derived intervention levels for implementation of protective actions within the ingestion planning zone.

These intervention levels are based on Food and Drug Administration (FDA) guidelines and are described in respective state procedures. The intervention levels are stated in terms of concentrations of radioactivity on the ground, in the soil, and in vegetation, milk, and water, which guide emergency responders in implementation of interdiction of foodstuffs to preclude exceeding appropriate Protective Action Guidelines (PAGs).

Figure 7-1

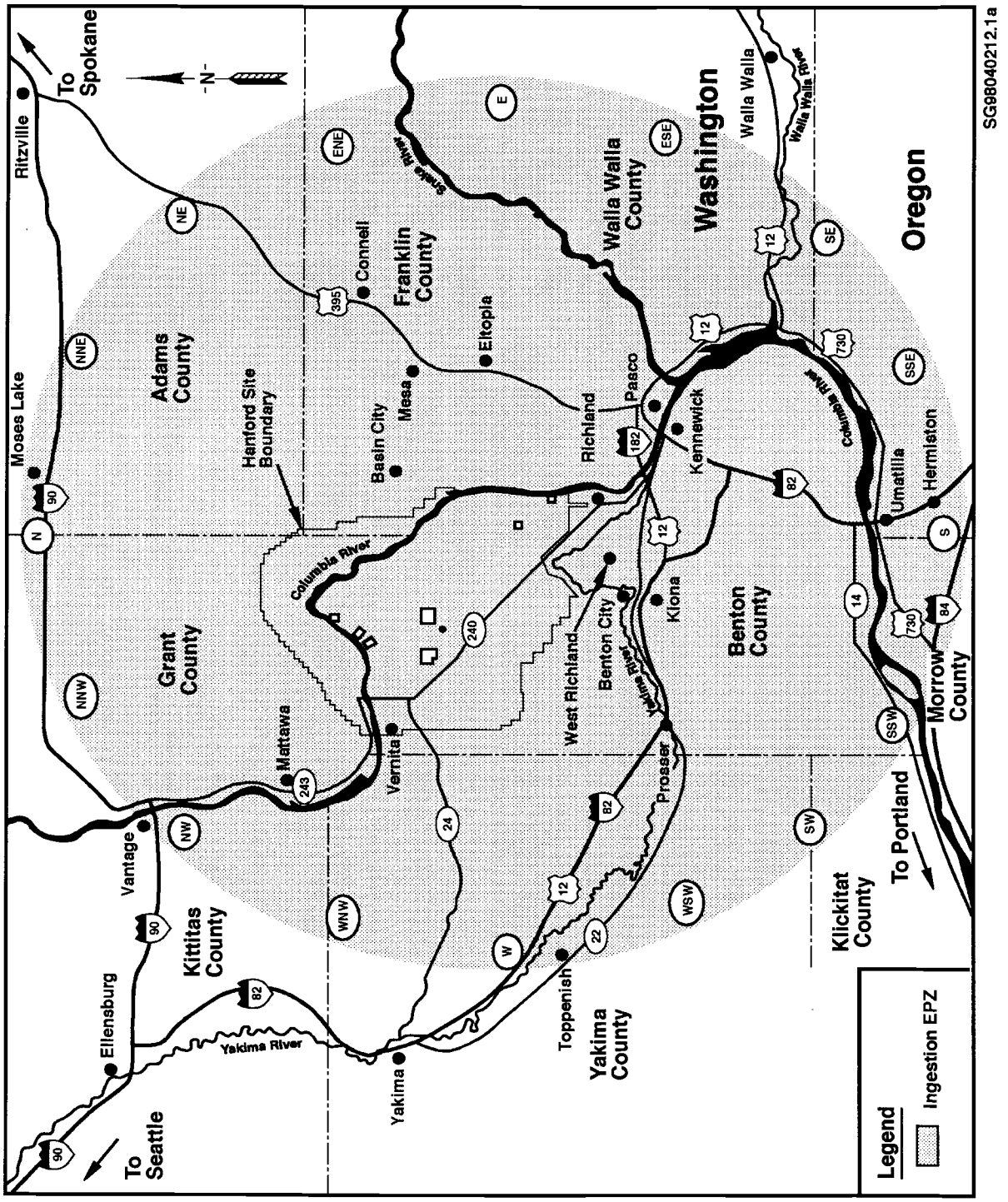
Plume Exposure Emergency Planning Zones



MSA 2011-08-0033-2

Figure 7-2

Ingestion Exposure Emergency Planning Zone



7.2 PROTECTIVE ACTIONS

Protective actions are those actions taken to preclude or reduce the exposure of individuals to hazardous materials following an accidental release at the Hanford Site. Protective actions must be promptly and effectively implemented or recommended for implementation, as needed, to minimize the consequences of emergencies and to protect the health and safety of workers and the public. Protective actions must be implemented individually or in combination to reduce exposures to a wide range of hazardous materials. Protective actions must be reassessed throughout an emergency and modified as conditions change.

Protective actions shall be predetermined for onsite personnel and the public and shall include:

- methods for controlling, monitoring, and maintaining records of personnel exposures to hazardous materials (radiological and nonradiological);
- procedures to implement the separate protective actions of sheltering and/or evacuation of workers;
- methods for controlling access to contaminated areas and for decontaminating personnel or equipment exiting the area;
- actions to be taken to increase the effectiveness of protective actions (i.e., heating, ventilation, and air conditioning shutdown during sheltering);
- methods for providing timely protective action recommendations, such as sheltering, evacuation, relocation, and food control, to appropriate offsite agencies;
- specific protective action criteria for use in protective action decision making; and
- the administration of medications.

7.2.1 Exposure Guideline Levels for Radiological Releases

PAGs are used to determine the appropriate PAR. The RL directs the use of the PAGs adopted by the states of Washington and Oregon, which are based on the PAGs published in the Environmental Protection Agency (EPA) 400 manual, Manual of Protective Action Guides and Protective Actions For Nuclear Incidents (EPA 1992). These PAGs are intended to apply to projected doses from exposures from airborne releases of radioactive materials and subsequent depositions during the early, intermediate, and late phases of an accident. The pathways considered include external gamma and beta dose from direct exposure to airborne materials and from deposited material, and the committed dose to internal organs from inhalation of radioactive material.

The projected dose values for initiating protective actions (evacuation or sheltering) specified by the states of Washington and Oregon is 1 rem total effective dose equivalent, where the projected dose represents the sum of the effective dose equivalent resulting from exposure to external sources and the committed effective dose equivalent from all significant inhalation pathways during the early phase. The PAG values for committed dose equivalent to the thyroid and the skin are 5 and 50 times larger, respectively.

The EPA PAGs are stated in terms of committed dose. Dose incurred prior to initiation of protective action (and after the early phase of an event) normally are not included when considering whether or not to take protective actions. In other words, it is intended that the PAG values be compared to the dose that can be avoided by taking protective actions.

The PAG acronym used in this plan shall be interpreted to mean where the total effective dose equivalent of 1 rem to standard man is the sum of the effective dose equivalent from exposure to external sources and the committed effective dose equivalent from inhalation during the early phase.

Response levels corresponding to these PAGs shall be derived for the specific radionuclides, foodstuffs, and animal feeds of interest according to the FDA recommendations.

7.2.2 Exposure Guideline Levels for Nonradiological Releases

For chemicals, the protective action criteria, listed in order of preference, are used: Acute Exposure Guideline Levels (AEGLs) [using the one hour emergency exposure period] promulgated by the EPA; Emergency Response Planning Guidelines published by the American Industrial Hygiene Association; and Temporary Emergency Exposure Limits (TEELs) developed by DOE. For these criteria, the exposure level to be used represents no irreversible health effects.

To determine whether a chemical consequence exceeds the protective action criteria, the highest time-weighted average concentration predicted or measured for any 15-minute period (i.e., the maximum or peak 15-minute time-weighted average concentration) should be compared to the protective action criteria. For exposure periods of less than 15 minutes, concentrations for comparison with the guidelines may be calculated over a shorter time period (e.g., the exposure duration).

For hazardous biological materials identified in subsection 1.3.3.2 of this plan, protective action criteria are considered exceeded and immediate protective actions are required for any actual or potential release of agents or toxins outside of secondary containment barriers. Long-term protective action criteria are specified by state or local public health officials.

7.2.3 Onsite Protective Actions

7.2.3.1 Hanford Emergency Operations Center. The Hanford EOC emergency procedures shall detail response actions to be taken in order to prevent or reduce exposures.

These procedures shall include provisions for:

- emergency communications to site personnel;
- decontamination of personnel and equipment, including those evacuated from the site, as appropriate;
- determination of the contaminated area surrounding the affected facility; and
- area or site evacuation planning.

7.2.3.2 Facilities

7.2.3.2.1 General Purpose Facilities. General purpose facilities shall maintain an emergency response capability that enables them to implement appropriate protective actions when ordered and to respond to standard facility emergencies (e.g., fires).

These capabilities shall include provisions for:

- facility take cover to include shutdown, when appropriate, of heating, ventilation, and air-conditioning systems;

- facility evacuation including persons with permanent or temporary disabilities and transient personnel (i.e., persons not normally assigned to the facility);
- emergency communications to facility personnel;
- identification of potentially exposed personnel and ensuring they receive appropriate follow-up evaluation;
- predetermined facility evacuation routes, staging areas, and transportation in the event of an area or site evacuation; and
- personnel accountability per subsection 7.2.3.4.

Each employee is responsible for his/her own health and safety and for taking appropriate actions in accordance with emergency signals and/or instructions.

7.2.3.2.2 Low-hazards and Hazardous Facilities. Site contractor emergency procedures for low-hazards and hazardous facilities shall provide for the immediate actions to be taken to prevent or reduce exposures. These procedures, which are implemented by the BED/BW or IC, shall include provisions for:

- facility take cover to include shutdown, when appropriate, of heating, ventilation, and air-conditioning systems;
- facility evacuation including persons with permanent or temporary disabilities and transient personnel (i.e., persons not normally assigned to the facility);
- ensuring that facility emergency response personnel are equipped with adequate dosimetry equipment to allow for the accurate evaluation of their exposures;
- controlling and monitoring radiation and hazardous material exposures to facility emergency personnel as low as reasonably achievable (ALARA);
- emergency communications to facility personnel;
- informing the POC whenever facility take cover or evacuation sirens are activated;
- shutdown of operations or other operating actions;
- identification of essential personnel per subsection 7.2.3.2.4;
- identification of exposed and potentially exposed personnel and ensuring they receive appropriate follow-up evaluation;
- predetermined facility evacuation routes, staging areas, and transportation in the event of an area or site evacuation;
- protective equipment, monitoring, and decontamination capabilities for hazardous materials present at the facility;
- access control; and
- personnel accountability per subsection 7.2.3.4.

Each employee is responsible for his/her own health and safety and for taking appropriate actions in accordance with emergency signals and/or instructions.

7.2.3.2.3 Lockdown. The intent of a lockdown is to enable security forces to better protect special nuclear materials in the event that a security barrier has been compromised. Currently, implementation of a lockdown is only applicable to the 200 Area Interim Storage Area complex. Lockdown does not preclude implementation of protective actions. Protective actions during lockdown activities shall be coordinated between the Shift Operations Manager and security forces. If the take cover alarm sounds during a lockdown, all personnel, including security personnel without proper personal protective equipment, will move to an indoor location and a security perimeter will be established.

7.2.3.2.4 Essential Personnel. Those designated by the facility management or site contractor as the minimum number of personnel who provide necessary services or support to maintain facilities and/or equipment in a safe shutdown or operational mode. Minimum staff as delineated in a facility safety analysis report or authorization basis may be considered essential personnel.

7.2.3.2.5 Long Term/Total Facility Evacuations. Emergencies on the Hanford Site may result in long-term and total evacuation of facilities. Low-hazards and hazardous facilities shall consider preplanning for long-term and total evacuation. If the facility determines that preplanning is necessary, those actions identified shall be integrated into the appropriate facility plans and/or procedures.

7.2.3.3 Remote and Transient Locations. Site contractors shall establish processes to ensure that all employees can receive emergency messages, are accounted for, and are able to take appropriate protective actions in accordance with this plan and site-wide emergency procedures.

Special planning may be needed to meet these requirements for some select types of work, such as:

- workers that are assigned to locations where there are no fixed Hanford Site Emergency Alerting System devices or no nearby buildings that provide adequate take cover protection; or
- workers whose routine work location is transient (varies or changes periodically).

Planning must ensure that workers are aware of the specific process for their work location (i.e., how they would be notified, where they would go and who to report to) and must be maintained to account for changes in work location or other conditions that could affect the ability to take appropriate action. Contractors shall test processes established for remote locations and transient workers.

7.2.3.4 Personnel Accountability. Each facility on the Hanford Site shall provide for an evacuation accountability system commensurate with the hazards associated with the facility. The accountability shall be conducted immediately after emergency evacuation has been completed to ensure that all employees and transient personnel (i.e., persons not normally assigned to the facility) are properly accounted for.

7.2.3.5 Access Control. During an emergency, access will be controlled to impacted areas. Procedures shall be maintained to allow emergency personnel access to controlled areas as necessary. Access to the ICP or event scene requires the approval of the IC. Site contractors shall maintain access control procedures that include logging entries, providing dose assessments, and maintaining exposure records for all emergency workers.

7.2.3.6 Area or Site Take Cover. Emergency procedures/checklists shall be maintained to provide instructions for implementing an area or site take cover. These procedures/checklists shall include, as a minimum, criteria for the implementation, notification, and termination of an area or site take cover. Hanford Patrol shall be responsible for implementing initial take cover protective actions until the Hanford EOC is operational.

7.2.3.7 Area or Site Evacuation. Emergency procedures/checklists shall be maintained by Hanford Patrol and RL/ORP/PNSO to provide instructions for implementing an area or site emergency evacuation. These procedures/checklists shall include, as a minimum, criteria for establishing an evacuation plan, determining the evacuation routes (primary and alternate), notifying facilities, and coordinating and conducting the actual evacuation. Hanford Patrol shall be responsible for implementing initial evacuation protective actions until the Hanford EOC is operational.

Evacuation routes for the Hanford Site are shown in Figure 7-3. Specific routes will be determined at the time of the event based on event magnitude, location, and meteorology. Private and government vehicles are available to provide transportation in the event of an emergency evacuation. Periodic drills and exercises are performed to ensure that an adequate employee-to-vehicle ratio is maintained to provide a timely and safe evacuation of personnel.

7.2.4 Offsite Protective Actions

Initial PARs appropriate for each emergency classification have been predetermined by RL and adjacent counties. These initial, preplanned PARs, as indicated by the event classification and location, shall be included in the initial notification to offsite agencies. The determination for the need for additional PARs shall be based on consequence assessments that indicate when applicable protective action criterion may be exceeded at the Hanford Site boundary. Notifications to the state and the counties adjacent to the site are delineated in subsection 5.1.1.2.1. The notification shall include PARs as appropriate.

Immediate protective actions decisions within the plume exposure pathway are the responsibility of the appropriate county. Protective action decisions by offsite authorities within the plume EPZ may include access control, sheltering, and evacuation.

Protective action decision notification to populations within the plume EPZ is the responsibility of the counties and is primarily provided using the Emergency Alert System (EAS). Benton, Franklin, and Grant County residents within the radiological plume EPZs receive the EAS messages via tone alert radios in their homes. Persons on or along the Columbia River are alerted by sirens or boat patrols. County emergency plans and procedures address protective action decisions, public warning, evacuation routes, and assistance centers.

Protective action decisions for the ingestion exposure EPZ are the responsibility of the state. The Hanford EOC shall provide the states with hazards assessment data necessary to identify areas where persons must be relocated or where food control is necessary. The states will coordinate implementation of the protective action with the impacted counties.

Notification to populations with the ingestion EPZ shall be accomplished by affected counties and the states using the EAS, as appropriate, and news media reports. State and county emergency workers shall follow protective guidance as established by the states.

7.2.5 Protective Equipment and Supplies

Protective responses for minimizing radiological exposure and contamination include the use of protective clothing and respiratory equipment. As applicable, each site contractor shall develop procedures to identify the location, issuance and use of emergency equipment.

Additionally, HPMC shall be responsible for obtaining and approving the use of a thyroid blocking agent, such as potassium iodide, which may be used by Hanford emergency workers in the event of a release of radioiodine from Energy Northwest's Columbia Generating Station. Each site employer shall determine their need for the use of a thyroid blocking agent and, as applicable in coordination with the Site Medical Director, develop procedures for acquiring and administration of the agent during Energy Northwest events involving the need for radioiodine protection.

7.3 REENTRY

Reentry (also referred to as entry into the hot zone) is the act of reentering a facility or affected area that has been evacuated or closed to personnel access during the course of an emergency for the purpose of performing emergency activities or assessing facility damage to determine if the emergency can be terminated, and/or for determining the extent of required recovery activities. Reentry can be performed at any time before termination of the emergency and during recovery activities.

Prior to event termination, the IC shall be responsible for determining appropriate protective measures for personnel reentering the event facility or area and for authorizing entry into the hot zone to perform time-urgent actions including rescue or evacuation of personnel remaining in the incident scene hazard area and mitigation activities to protect life, environment, and property. For actions that are not time-urgent and in situations where additional facility-specific expertise is needed, the IC should confer with the BED, if available, prior to entry into the hot zone.

Reentry planning shall include contingency planning to ensure the safety of reentry personnel, such as planning for the rescue of reentry teams. All individuals involved in reentry shall receive a hazards/safety briefing prior to emergency response activities consistent with Federal, state, and local laws or regulations.

The event contractor will determine the accessibility of the site areas during and after the emergency and evaluate the advisability of reentry operations as required. Current operating records and other essential information for evaluating the emergency may be used in making these decisions.

During recovery, the Onsite Recovery Director is responsible for reentry authorization.

7.3.1 Reentry Exposure Consideration

The means shall exist for estimating exposure to hazardous materials (radiological and nonradiological) and for protecting workers and the general public from exposure during reentry and recovery activities.

The guiding principle is to minimize the risk of injury to those persons participating in the rescue and recovery activities; however, this principle must be balanced against the immediate objective of retrieving a deceased victim, protecting property, saving lives, or mitigating a secondary event.

Individuals responsible for authorizing reentry must carefully examine any proposed actions involving further hazardous or radioactive material exposure by weighing the risks of exposure, actual or potential, against its benefits. Exposure probability, the biological consequences related to dose, and the number of people exposed are the essential elements to be evaluated in making a risk determination.

Emergency situations involving the saving of lives require separate criteria than those actions required to retrieve deceased victims or to save property. The limits for radiation exposure for reentry activities shall be in accordance with contractor-specific radiological protection program documentation, which is based on 10 CFR 835.1301 requirements.

An individual whose occupational dose has exceeded the numerical value of any of the limits specified in contractor-specific radiological protection program documentation as a result of an authorized emergency exposure may be permitted to return to work in radiological areas during the current year providing that requirements of 10 CFR 835.1301 are met.

Limits for nonradiological hazardous materials will be established using the lowest limits of:

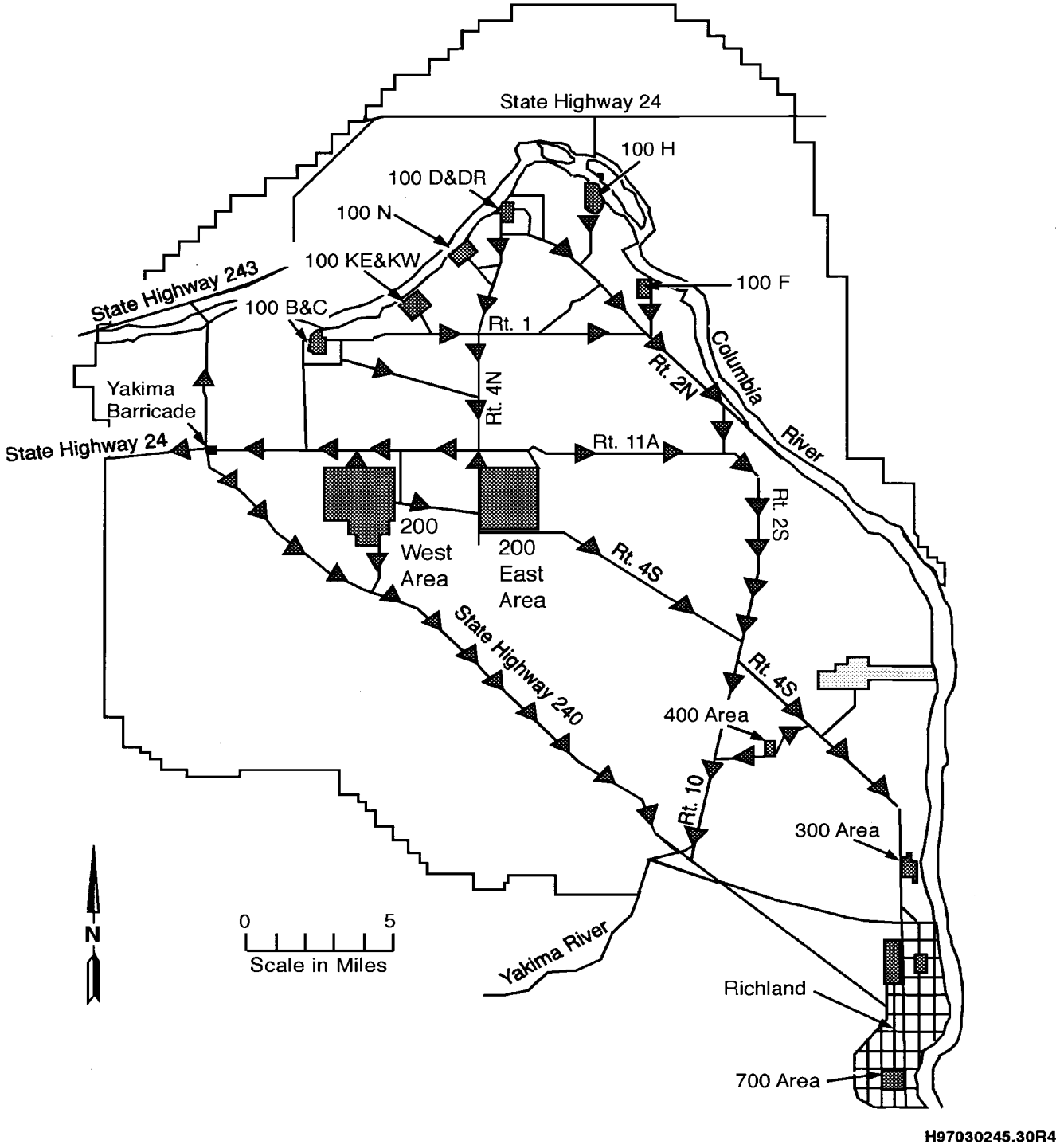
- OSHA permissible exposure limits;
- American Conference of Governmental Industrial Hygienists Threshold Limit Values; and
- specific Washington State Department of Labor and Industries permissible exposure limits mandated by RL/ORP/PNSO (e.g., asbestos).

7.3.2 Termination of Protective Actions

The relaxation or lifting of protective actions generally shall be based on facility conditions and consequence assessments. The Policy Team will decide when onsite protective actions can be modified, after consultation with the SMT. The Policy Team will provide recommendations to affected counties and states for the relaxation of offsite emergency protective actions (i.e., evacuation or sheltering within the plume EPZ). The states shall be responsible for decisions on relaxation of ingestion protective actions, based on data provided by the UDAC.

Figure 7-3

Hanford Site Evacuation Routes[1]



H97030245.30R4

[1] Permit requirement: Figure 7-3, Class 1 Modification 9/30/00

8.0 EMERGENCY MEDICAL SUPPORT

RL/ORP/PNSO shall ensure that provisions exist on the Hanford Site for emergency medical aid, triage, and decontamination, and the planning for mass casualty situations. Because of the potential for injuries to be accompanied by radiological contamination, medical support shall include documented arrangements with offsite medical facilities to accept and treat contaminated, injured personnel for emergency medical services not provided on the site. A synopsis of the MOUs with offsite medical facilities can be found in Table 3-1 of this plan.

8.1 EMERGENCY MEDICAL RESPONSIBILITIES

Medical treatment and preparation for mass casualty situations shall be planned in advance in accordance with DOE O 440.1A (or replacement directive), to include workers contaminated by hazardous material. Hanford Site organizations are authorized by RL/ORP/PNSO to provide the medical response to onsite emergencies. Their roles and responsibilities are outlined in the following subsections. Specific procedures related to each major organization involved in site emergencies are located within documentation maintained by the respective organization.

A Hanford Site medical emergency is defined as any medical incident that results in the activation of the 911 emergency response system.

A mass casualty incident is defined as a medical incident that at first overwhelms the ability of the responders and/or medical care facilities to initially provide normal levels of care to injured victims.

Sharing patient information between onsite and offsite health care providers during emergencies shall be consistent with the requirements of the Health Insurance Portability and Accountability Act of 1996 and applicable MOUs.

8.1.1 Hanford Fire Department

The Hanford Fire Department, which includes emergency medical technicians and paramedics, is the lead agency for responding to medical emergencies. In this capacity, the Hanford Fire Department is responsible for:

- operating according to the Mid-Columbia Emergency Medical Services and Trauma Council and their medical program director;
- meeting requirements including, but not limited to:
  - patient care;
  - triage at the site;
  - ambulance transport of injured or ill employees to medical facilities and, if available, arranging for air transport directly from the site in extreme medical situations; and
  - notification and activation of mutual aid assistance that may be needed during the emergency
- implementing the Hanford Incident Command System to manage and control major medical incidents;

- requesting assistance from HPMC when additional medical support is needed; and
- coordinating a temporary morgue for Hanford fatalities.

8.1.2 HPM Corporation Occupational Medical Services

The primary role of HPMC during onsite medical emergencies is to provide support to the IC as requested. In this capacity, HPMC is responsible for:

- providing medical support, treatment, and facilities (e.g., physicians, physician assistants, occupational health nurses, behavioral health clinicians, and other related medical support staff) for emergencies in support to the IC;
- providing support for the medical treatment of employees who have received internal or external contamination from radioactive, chemical, or biologic exposures;
- maintaining an appropriate supply of pharmaceuticals for use in Hanford emergencies;
- coordinating the site medical activities with the medical program director of Mid-Columbia Emergency Medical Services and Trauma, local hospitals, and other medical organizations as appropriate; and
- managing and providing staffing for the Health Care Centers.

8.1.3 Hanford Patrol

The Patrol Operations Center operates the site 911 emergency response system. As part of the medical response, the POC is responsible for:

- contacting the Hanford Fire Department when a request for fire and/or emergency medical services has been received;
- contacting the HPMC on-call provider for medical incidents involving radiological or chemical exposures; and
- providing information regarding onsite medical emergencies to appropriate contractor organizations.

8.1.4 Hanford Internal and External Dosimetry and Whole Body Counting Programs

During medical emergencies that involve internal or external radionuclide contamination, these programs provide support (e.g., *in vivo* radio assays, bioassay program, exposure evaluators) to HPMC and other medical personnel to help determine the appropriate medical treatment.

8.1.5 Other Hanford Site Contractors

Site contractor health physics and radiation protection technologists and/or industrial hygienists provide decontamination for injuries, as appropriate. Hanford Site contractors also provide support for transportation, security, notifications, communications, etc., as described in respective subsections of section 2.0.

8.1.6 Local Hospitals

Through memorandums of understanding with RL, Kadlec Regional Medical Center in Richland, Trios Health in Kennewick, and Lourdes Medical Center in Pasco provide emergency health care for patients delivered by the Hanford Fire Department.

This care includes:

- accepting patients transported by Hanford Fire Department as the result of Hanford emergencies;
- assuming responsibility for patient care once patient arrives at the hospital; and
- coordinating with Mid-Columbia Emergency Medical Services, Tri-City Trauma Services, and other agencies for support and air transport as needed.

A copy of each MOU is provided in Appendix B.

8.2 MEDICAL EMERGENCY FACILITIES AND EQUIPMENT

8.2.1 Health Care Centers

The Health Care Centers are located in Richland and in the 200 West Area. HPMC operates the Health Care Centers to provide initial medical care to patients with occupational injuries or illnesses that do not require hospitalization. The Health Care Centers are staffed by occupational health nurses, physicians, physician assistants, and medical technologists. Initial medical care for minor medical emergencies may be provided at these centers before transport to a local hospital.

8.2.2 Site Decontamination Equipment

Decontamination equipment is available at a number of locations on the Hanford Site. Equipment or facilities range from eye washes, showers, and skin decontamination kits, to a mobile hazardous materials decontamination unit operated by the Hanford Fire Department.

8.2.3 Medical Emergency Equipment

Equipment for cardiopulmonary resuscitation, cardiac defibrillation, and advanced cardiac life support; supplies and equipment for the management of trauma; and equipment to support rescue and/or extrication of casualties are maintained by the Hanford Fire Department. Supplies for triage are available on board each Hanford Fire Department ambulance.

8.2.4 Medical Emergency Transportation

Ambulances shall be maintained and operated by the Hanford Fire Department. Provisions shall be made for air transportation of contaminated patients to medical facilities for specialized medical treatment. Transportation support beyond that provided by the Hanford Fire Department shall be coordinated according to mutual aid and trauma service agreements.

8.2.5 Offsite Medical Facilities

The three local hospitals, Kadlec Regional Medical Center in Richland, Trios Health in Kennewick, and Lourdes Medical Center in Pasco, provide treatment for emergency patients from the Hanford Site; however, because of proximity, Kadlec Medical Center is the facility most often used by the site. These hospitals have combined to provide Level Three trauma care for the community.

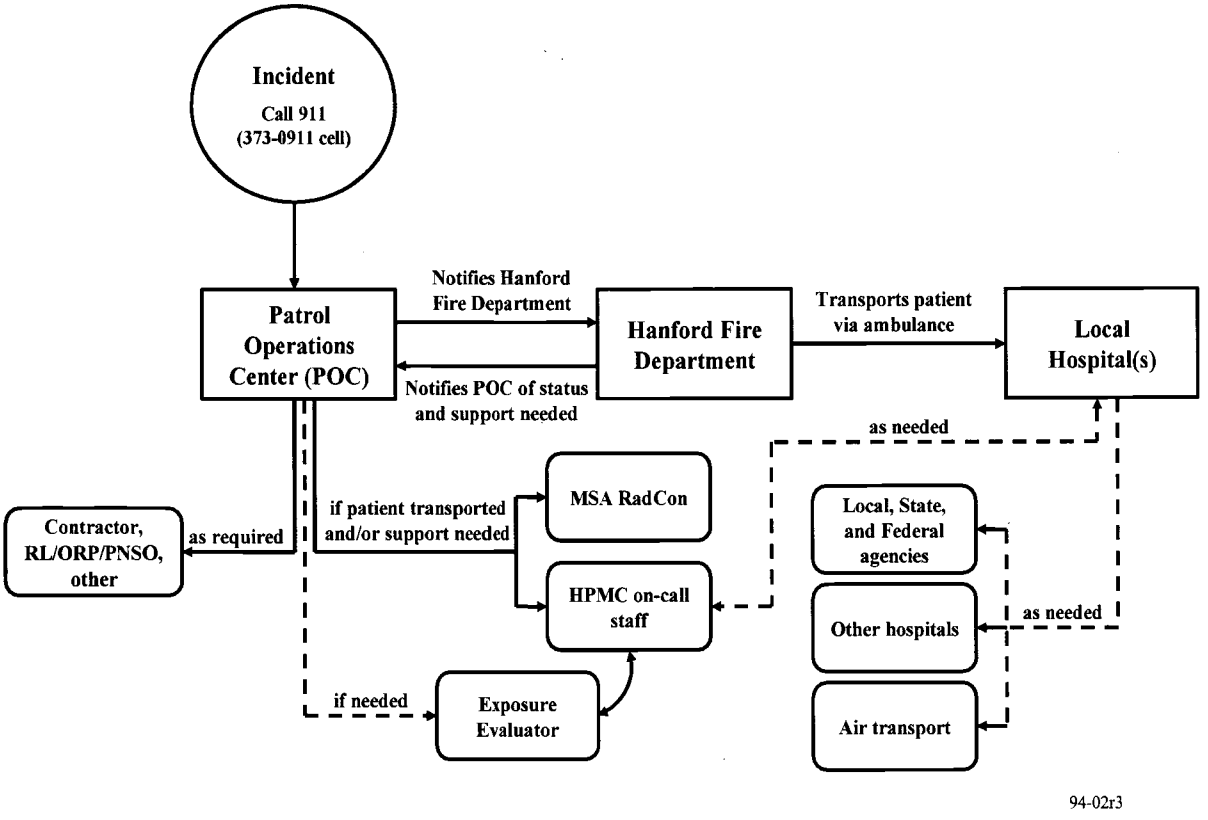
Memorandums of understanding with each hospital are maintained by RL. A copy of each MOU is contained in Appendix B. Other offsite medical facilities may be involved in Hanford medical emergencies through agreements with the local hospitals.

RL shall ensure the provision of training and exercise support related to the services provided to the site. HPMC shall provide medical expertise on radiological and chemical exposure decontamination and treatment, as requested.

8.3 MEDICAL EMERGENCY COMMUNICATIONS

The communications process during a Hanford medical emergency is illustrated in Figure 8-1.

Figure 8-1


Incident
Call 911
(373-0911 cell)
Patrol Operations Center (POC)
Notifies Hanford Fire Department
Notifies POC of status and support needed
Hanford Fire Department
Transports patient via ambulance
Local Hospital(s)
as needed
Contractor, RL/ORP/PNSO, other
as required
if patient transported and/or support needed
MSA RadCon
HPMC on-call staff
Local, State, and Federal agencies
Other hospitals
as needed
Air transport
if needed
Exposure Evaluator
94-02r3

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9.0 EMERGENCY TERMINATION AND RECOVERY

Predetermined criteria for termination of emergencies, assignment and make-up of a recovery organization, and site recovery plan development shall be maintained in DOE-0223, *Emergency Plan Implementing Procedures*. Recovery shall include notifications associated with termination of an emergency and establishment of criteria for resumption of normal operations.

9.1 TERMINATION OF THE EMERGENCY

In general, response activities are terminated when the situation has been stabilized. At this point, potential threats to workers, the public, and the environment have been characterized, conditions no longer meet established emergency categorization criteria, and it appears unlikely that conditions will deteriorate. Once the emergency has been declared terminated, activities may then focus on recovery.

It is the function of the BED/BW/IC to declare the termination of an event after applicable criterion has been met where the Hanford EOC has not been activated.

In an event where the Hanford EOC has been activated, the BED, IC, and Site Emergency Director must confer and agree that termination can be declared and communicate the information to the Emergency Manager.

Termination shall be coordinated with offsite agencies responsible for offsite emergency response and notification. The Emergency Manager will coordinate the termination recommendation with the state and county representatives and make the official emergency termination declaration. The Policy Team will proceed with official notification to offsite emergency agencies that the emergency is terminated and the recovery phase has been initiated. Notification will be done through the Hanford EOC emergency communications network. The criteria for the termination decision and the basis for relaxing applicable offsite PARs will be included in the notification as appropriate. Termination information will also be provided to the media and public.

9.2 RECOVERY PLANNING

Prior to termination of the emergency event, a recovery organization shall be formed and a recovery plan developed, if determined necessary, in accordance with established procedure. The recovery organization shall develop and implement plans necessary to return the affected facility and surrounding areas to normal. Restart of operations is performed in accordance with the approved plans. RL/ORP/PNSO shall direct recovery planning for Hanford Site facilities and support the offsite recovery efforts of Federal, state, and local agencies.

For recovery from events that require implementation of the Hanford ICS but not activation of the Hanford EOC, a recovery organization shall be assembled commensurate with the activities necessary to resume facility operations.

For recovery from events where the Hanford EOC has been activated, recovery planning shall include dissemination of information to offsite agencies regarding the emergency and possible relaxation of public protective actions; planning for decontamination actions; establishment of a recovery organization; development of reporting requirements; and establishment of criteria for resumption of normal operations.

Depending on the event contractor, RL/ORP/PNSO shall determine the type of accident investigation necessary and ensure that actions are performed in accordance with DOE O 225.1B, *Accident Investigations* (DOE 2011). In addition, RL/ORP/PNSO with assistance from the event contractor, shall provide for investigation of emergency root cause(s) and corrective action(s) to prevent recurrence in accordance with DOE requirements.

9.2.1 Planning and Operations for Onsite Recovery

For events where the Hanford EOC has been activated, the Emergency Manager shall determine the extent of recovery planning needed. If there was no measurable release of radiological or nonradiological hazardous materials to the environment, no effects to the offsite or to other onsite facilities, and the facility can be returned to pre-emergency conditions by using normal facility work processes, a formal site recovery plan is not necessary.

If a recovery plan is deemed necessary, the Emergency Manager shall designate a Recovery Manager who is responsible for assessing the extent of recovery actions necessary and determining the organization needed to implement recovery operations, and an Onsite Recovery Director who is responsible for appointing members of the Onsite Recovery Team and developing the Site Recovery Plan.

Detailed procedures for recovery planning are contained in DOE-0223, *Emergency Plan Implementing Procedures*.

9.2.2 Planning and Operations for Offsite Recovery

The states of Washington and Oregon are responsible for determining when the relaxation of protective measures can begin, and will make offsite reentry and recovery decisions. The states shall coordinate recovery activities with the affected counties, who will coordinate local public health actions and disaster assistance. Recovery actions also will be coordinated with RL/ORP/PNSO.

The major areas of effort for offsite recovery include:

- maintenance of access and traffic control of contaminated areas until cleanup is accomplished;
- imposition of control measures on possibly contaminated food and dairy products until radioactivity or chemical contaminant levels are deemed acceptable or the products are decontaminated or destroyed;
- dissemination of public health advice for individuals with noncommercial sources of food and dairy products;
- direction of decontamination activities, by way of natural radioactive decay, contamination removal, burial, treatment, or dilution;
- determination of radioactivity or chemical contaminant levels by field and laboratory analysis;
- documentation of population doses, individual doses, and environmental radioactivity or chemical contaminant levels; and
- dissemination of public information.

RL/ORP/PNSO shall provide representatives to state recovery task forces, as requested.

9.2.3 Incompatible Waste[1]

After an event, the BED/BW and/or Onsite Recovery Director and staff shall provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility. The BED/BW and/or Onsite Recovery Director and staff shall further ensure that no waste that might be incompatible with the released material is treated, stored, and/or disposed of until cleanup is completed.

Cleanup activities shall be performed by trained site personnel. In order to meet 29 CFR 1910.120(q)(11) criteria, such personnel shall have completed the training requirements of 29 CFR 1910.38(a), 29 CFR 1910.134, 29 CFR 1910.1200, and other appropriate safety and health training made necessary by the tasks that they are expected to perform (e.g., personnel protective equipment, decontamination procedures). In addition, all equipment to be used in the performance of the clean-up work shall be in serviceable condition and shall have been inspected prior to use.

Activities may include, but are not limited to:

- neutralization of corrosive spills;
- chemical treatment of reactive materials to reduce hazards;
- overpacking or transfer of contents from leaking containers;
- use of sorbents to contain and/or absorb leaking liquids for containerization and disposal;
- decontamination of solid surfaces impacted by released material, e.g., intact containers, equipment, floors, containment systems, etc.;
- disposal of contaminated porous materials that cannot be decontaminated and any contaminated soil;
- containerization and sampling of recovered materials for classification and determination of proper disposal technique; and
- follow up sampling of decontaminated surfaces to determine adequacy of cleanup techniques as appropriate.

Waste from cleanup activities shall be designated and managed as newly generated waste. A field check for compatibility before storage shall be performed, as necessary, to ensure that incompatible wastes are not placed in the same container and containers of waste are placed in storage areas appropriate for their compatibility class.

If it is determined that incompatibility of waste was a factor in the incident, the BED/BW and/or Onsite Recovery Director and staff ensures that the cause is corrected. Examples would be modification of an incompatibility chart or increased scrutiny of waste from a generating unit when incorrectly designated waste caused or contributed to an incident.

[1] Permit requirement: Subsection 9.2.3, Class 1 Modification 6/30/01

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10.0 PUBLIC INFORMATION

Public information is an integral part of the emergency management program at the Hanford Site. Accurate, candid, and timely information consistent with requirements of the Freedom of Information Act and the Privacy Act shall be provided to site workers and the public before, during, and after emergencies to establish facts and avoid speculation. RL/ORP/PNSO shall coordinate interagency and public information activities at the regional level and coordinate directly with DOE-HQ.

RL/ORP/PNSO and state and local governments share the responsibility to provide this information. RL/ORP/PNSO shall develop a public information program, including methods and procedures, to provide for the:

- education of the public and employees on what to do in the event of an emergency;
- dissemination of accurate, timely information during an emergency; and
- dissemination of information to help the public and employees recover after an emergency.

Coordination with offsite agencies that have the responsibility to provide emergency warning, instructions, and information to the public is vital to the success of the public information program. The RL communications organization shall have the lead in coordinating the public information program with offsite agencies. Interfaces and assistance provided to offsite agencies related to public information shall be documented in MOUs. Applicable MOUs are contained in Appendix B.

10.1 EMERGENCY PUBLIC INFORMATION PROGRAM

RL/ORP/PNSO and site contractor personnel shall cooperatively ensure that an adequate emergency public information program is established, staffed, and maintained, commensurate with site hazards, to ensure that information can be provided to the public and media during an emergency.

Adherence to emergency public information policies and requirements shall be demonstrated during exercises, appraisals/evaluations, and approved training programs.

10.2 EMERGENCY PUBLIC INFORMATION ORGANIZATION

The emergency public information organization shall be made up of RL/ORP/PNSO and site contractor personnel working under the direction of the Public Information Director or designee. Personnel assignments shall correspond as closely as possible to normal duties. Two components within the Hanford EOC have responsibilities for emergency public information: the Policy Team and the JIC.

Emergency public information support to offsite responses under the RAP is addressed in DOE/RL-92-49, *U.S. Department of Energy Radiological Assistance Program Response Plan Region 8.*

10.2.1 Policy Team

The Policy Team has overall responsibility for emergency public information. The Public Information Director provides direction to the JIC and reports to the Emergency Manager.

Communications with the JIC are available via telephone, computer, and facsimile equipment. Cable television service is available in the Hanford EOC for viewing local and national news reports.

10.2.1.1 Responsibilities. The Public Information Director (or designee) is responsible for:

- timely and accurate release of information to the public and media;
- advising the Emergency Manager on actions and responses that will reduce public uncertainty;
- approving the release of emergency information;
- informing DOE-HQ of emergency public information actions; and
- protecting the organization's image/credibility as they relate to emergency responses, control, and recovery.

The Web Page Coordinator is responsible for developing event information.

10.2.2 Joint Information Center

Public information activities at the Hanford Site are coordinated with offsite agencies through a JIC. The Hanford JIC is a dedicated facility located in Richland, Washington. Access to this area is controlled. The JIC may also use other portions of the building to conduct news conferences and media interviews.

Personnel shall be assigned to provide support in media services, public and media inquiry, JIC management and administrative activities, and media monitoring. Persons with facility-specific technical expertise related to the emergency shall be assigned to participate in the JIC emergency public information activities, as appropriate, and be given a protocol briefing prior to news conferences.

10.2.2.1 Information Release. Information is released in a variety of ways from a number of official sources. The emergency public information program at the Hanford Site is designed with the JIC as the single point from which emergency information is released. This allows the Hanford Site and offsite agencies to coordinate the accurate and timely release of public information.

RL shall encourage the participation of impacted offsite agencies in the JIC. In addition to RL/ORP/PNSO and Hanford Site contractors, the states of Washington and Oregon, and the counties within the plume EPZs of the Hanford Site have included this participation in their emergency plans. The JIC is the primary source of information to the public on the event, corrective actions, and potential ramifications. Additionally, local authorities utilize the JIC as their means to provide information to the media and the public. State agencies may release information directly from the state emergency center; however, coordination through the JIC is recommended.

The information release functions of the JIC include:

- coordination of emergency information with affected agencies;
- conducting news conferences;
- rumor control;
- response to telephone inquiries from the public and media; and
- information to employees.

Information is reviewed prior to issuance to ensure that no classified or unclassified controlled information is contained in the release. In situations involving classified or unclassified controlled information, the JIC will provide sufficient unclassified information to explain the emergency response and protective actions required for the health and safety of workers and the public.

10.2.2.1.1 Emergency Information. The JIC will provide emergency information to the media, appropriate offsite agencies, and DOE-HQ.

Initial emergency information or public statements shall be approved by the Public Information Director. Subsequent updates shall be coordinated with DOE-HQ.

Each offsite agency shall develop and approve its own emergency information. However, proposed information should be shared with agencies to ensure accuracy and consistency of information being released.

10.2.2.1.2 News Conferences. News conferences are conducted from the JIC with spokespersons from local, state, and affected Federal agencies, and the Hanford Site. Conferences will be conducted, as the situation warrants, to provide an opportunity for the media to ask questions of responding agencies.

10.2.2.1.3 Rumor Control. Rumors may be identified by any member of the onsite or offsite emergency response organization. Within the JIC, the telephone teams and the media monitor are the primary identifiers of rumors. Any misinformation identified will be corrected as soon as possible through emergency web page updates, news releases, news conferences, and the telephone teams.

10.2.2.1.4 Telephone Teams. Telephone teams, staffed by site personnel, will answer questions from the public and media. Telephone teams will make use of emergency web page updates, news releases, emergency broadcast messages, fact sheets, and contacts with agency JIC representatives to provide information necessary to respond to inquiries.

10.2.2.1.5 Media Tours. Media tours of the affected area may be provided, if appropriate.

10.2.2.1.6 Information to Hanford Site Personnel. Information regarding work schedules, route closures, and other critical information is provided to site personnel via the Hanford Site Emergency Alerting System. Information to off-duty personnel is provided through the media.

10.2.2.2 Staffing and Responsibilities. JIC staffing shall be outlined in JIC procedures and shall provide functions to include:

- the timely release of accurate and understandable information to the public and media, and for responses to public inquiries;
- conducting news conferences with participation from Hanford Site personnel and appropriate offsite agencies;
- reviewing television broadcasts and news websites for inaccuracies;
- identifying and correcting rumors and inaccuracies;
- producing event information, media advisories, and fact sheets;
- relaying press announcements to the media, providing updates to the media not present at the JIC, and providing responses to incoming media phone queries;

- ensuring the review of information drafted for the media or the public for technical accuracy, security sensitivities, or classified information; and
- transmitting priority employee messages and safety information to employees.

In addition to the JIC Manager and site contractor communications staff, the JIC Decision Team is composed of Public Information Officers from Benton, Franklin, and/or Grant Counties, the states of Washington and Oregon, and involved Federal agencies. The basic function of the team is to jointly coordinate releases of information to the media and to provide accurate and timely information to the public regarding operations in their jurisdictions.

10.3 PUBLIC EDUCATION

RL shall assist the jurisdictions within Hanford Site EPZs in the development and implementation of programs to educate their residents on the actions to take in the event of an emergency at the Hanford Site.

RL shall participate, as requested, in public meetings sponsored by state, tribal, or local emergency management officials to make the public aware of DOE activities in the region, the potential risk from these activities, and the Hanford Site emergency preparedness program.

RL shall, as appropriate, provide information to the public and the media for major exercises in order to educate the local community on Hanford Site activities to test the emergency preparedness program. This information will be coordinated with local emergency management officials.

10.3.1 Plume Emergency Planning Zone Public Education

The state of Washington and Benton, Franklin, and Grant Counties have instituted a public education program to ensure that the members of the public within a plume EPZ of the Hanford Site are aware of the proper actions to take following notification of an emergency. The counties' programs have been identified in their respective emergency plans. These plans, developed cooperatively with RL and Energy Northwest, include:

- annual distribution of an emergency information calendar for residents within the plume EPZs;
- distribution of a brochure for farmers and growers;
- distribution of information for special audiences, such as boaters and Spanish-speaking residents;
- periodic public meetings; and
- annual surveys to determine the effectiveness of these programs.

Information provided to residents includes:

- a description of the hazards;
- how they will be notified;
- protective actions they may be asked to take (i.e., sheltering or evacuation);
- evacuation routes and where to go if they are asked to evacuate;

- special provisions for schools or other special facilities; and
- how those with special needs can get help.

10.3.2 Ingestion Emergency Planning Zone Public Education

The states of Washington and Oregon, affected tribal organizations, and counties are responsible to provide education to residents within the ingestion EPZ. Information may include:

- a description of the potential impact of an emergency on residents and the agriculture community;
- preventive measures to help avoid or reduce the impact if a release occurs; and
- actions to take during and after a release.

Information may be provided through the dissemination of printed materials to target audiences, conducting public meetings and providing information to the media.

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11.0 EMERGENCY FACILITIES AND EQUIPMENT

The provision of facilities and equipment adequate to support emergency response, including the capability to notify employees of an emergency to facilitate the safe evacuation of employees from the work place, immediate work area, or both shall be addressed. Facility-specific equipment may be listed in respective building emergency plans and/or procedures.

11.1 EMERGENCY FACILITIES

This section contains a description of facilities that have been equipped for emergency control, operations, and coordination. The functions, staffing, and activation criteria of the Hanford EOC are described in the various subsections of section 2.0.

11.1.1 Hanford Emergency Operations Center

The Hanford EOC is located in Richland, Washington. The Hanford EOC location provides favorable proximity to the emergency management and response staff, the DOE-HQ Emergency Communications Network, and to additional office space.

Additionally, the Hanford EOC is outside of Hanford Site facility plume EPZs thus ensuring a high probability of the Hanford EOC being habitable following an emergency on the Hanford Site. An emergency power generator is available to supply power to essential emergency equipment in the event of loss of normal power.

Primary and backup means of communication are available and capable of operating with other DOE elements and with other Federal, tribal, state, and local response organizations as applicable.

An alternate Hanford EOC has been established in the event the Hanford EOC becomes uninhabitable for any reason.

11.1.2 Hanford Patrol Operations Center

The POC monitors the emergency response (911 and 373-0911 for cellular phones) and business (373-3800) numbers, and acts as the single point-of-contact for the Hanford Site.

The POC notifies and/or dispatches the:

- Hanford Fire Department, including ambulance and the Hazardous Material Response Team;
- Hanford Patrol;
- HPMC on-call provider;
- Transportation on-call representative;
- EDO; and
- Benton County Sheriff personnel assigned to Hanford Site.

The POC also is responsible for:

- alarm monitoring;

- activation of designated Hanford Site Emergency Alerting System components to initiate onsite protective actions; and
- assisting in dispatch and radio communications for emergency responders.

11.1.3 Hanford Emergency Operations Center Shift Office

The Hanford EOC Shift Office is a 24-hour operational facility equipped to communicate information regarding occurrences at or affecting the Hanford Site to site contractor personnel and to state and local emergency management organizations.

Specific responsibilities of the Hanford EOC Shift Office include:

- activating designated Hanford Site Emergency Alerting System components to initiate onsite protective actions and activate the Hanford EOC; and
- providing notifications to the DOE-HQ EOC and state and local emergency management agencies.

Hanford EOC Shift Office notification responsibilities are covered further in applicable subsections of section 5.0. Specific operational desk instructions shall be maintained by the Hanford EOC Shift Office.

11.1.4 Medical Emergency Facilities

Capabilities for medical aid, triage, and personnel decontamination shall be available onsite. Emergency Medical Support is described further in section 8.0.

Medical emergency facilities include the following.

- Health Care Centers: Health Care Centers are located in Richland and in the 200 West Area. Health Care Centers provide initial medical care to patients with occupational injuries or illnesses that do not require hospitalization. Ambulance service is provided by the Hanford Fire Department.
- Site Decontamination Facilities: Personnel decontamination sites are located in several locations in the 100, 200, and 300 Areas.

Agreements shall be in place between RL and local hospitals for backup medical treatment. A copy of each MOU is contained in Appendix B.

11.1.5 State and County Emergency Centers

The Benton County Emergency Center is located in Richland, Washington.

The Franklin County Emergency Center is located in Pasco, Washington.

The Grant County Emergency Center is located in Moses Lake, Washington.

The Washington State Emergency Center is located at Camp Murray in Tacoma, Washington.

The Oregon Department of Energy Emergency Center is located in Salem, Oregon.

11.2 EMERGENCY EQUIPMENT[1]

Adequate personal protective equipment and other equipment and supplies (e.g., detectors, decontamination equipment) shall be available and operable to meet emergency preparedness requirements and the needs determined by the results of the EPHA, if required, and for emergency response personnel to carry out their respective duties and responsibilities.

Emergency and backup equipment (including monitoring devices) shall be located in readily accessible areas away from the scene of the potential accident. Equipment shall be available, as appropriate, to provide functions for the potential, credible emergencies such as:

- emergency dosimetry;
- personnel protection;
- radiation control monitoring instrumentation;
- monitoring of personnel, facilities, and the environment onsite and offsite;
- emergency medical treatment onsite;
- meteorological evaluation;
- handling of personnel contaminated with radioactive or toxic materials, and fatalities;
- supplying emergency power, water, and sanitation;
- emergency transportation for personnel evacuation;
- movement of earth or heavy loads; and
- emergency communications, including portable and secure communications equipment, as required.

To ensure equipment reliability, emergency equipment should, to the extent practical, be the same equipment used for routine operations. RL/ORP/PNSO and the site contractors maintain a variety of light and heavy equipment and supplies that could be diverted from routine use to emergency use, if needed.

All equipment that could be used in an emergency response is listed in site contractor property system databases, which can be quickly accessed to determine the current status of each piece of equipment.

As applicable, the BED/BW/IC and/or the Onsite Recovery Director and staff shall ensure that all equipment is cleaned and fit for its intended use before operations are resumed. This may include actions to ensure that depleted stocks of neutralizing and absorbing materials are replenished, self-contained breathing apparatus are cleaned and refilled, fire extinguishers are recharged or replaced, and protective clothing is cleaned (or disposed of) and restocked.

11.2.1 Assessment Equipment

Emergency equipment shall be available, as appropriate, to allow an early and reliable determination of the seriousness of an accident. The equipment for both emergency and continuing assessment of the facilities and environment at the Hanford Site consists of dosimeters, criticality detectors and alarms, and effluent and environmental monitoring equipment.

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[1] Permit requirement:Subsection 11.2, Class 1 Modification 12/31/08

Aerial surveillance and monitoring, performed by the Aerial Measuring System (DOE Nevada Operations Office), may be requested as a DOE emergency response asset.

11.2.1.1 Nuclear Accident Dosimeter. The Hanford Site nuclear accident dosimeter is a stationary device that provides neutron and gamma dose information following a criticality or high-level radiation event. The dosimeter satisfies the requirements for an emergency dosimetry system by providing a system capable of determining the:

- neutron dose (in rads);
- photon dose in the presence of neutrons (from 10 to 10,000 rads); and
- neutron flux in each of five energy intervals, which permits calculation of the neutron dose equivalent in rem.

Instructions for recovery of these dosimeters are contained in site contractor procedures.

11.2.1.2 Emergency Instrumentation. Under emergency conditions, many needed supplies and equipment would be drawn from the instrument and equipment pool used for normal operations at the Hanford Site. This ensures that multiple sources of supplies are available and that the equipment is calibrated, maintained, and ready for use by personnel involved in controlling the emergency.

11.2.2 Fire Control Equipment

Buildings are equipped with fire control equipment, such as automatic fire-suppression (sprinkler) systems and portable fire extinguishers, in accordance with National Fire Protection Association (NFPA) codes and standards. The fire protection equipment is inspected, tested, and maintained in accordance with NFPA codes and standards.

11.2.3 Personal Protective Equipment

Buildings shall have safety showers and eyewash stations, located as necessary, in accordance with applicable regulations. Drainage from these stations shall be contained. In addition to these stations, portable eyewash equipment shall be maintained at protective storage areas as necessary. The eyewash and shower stations shall be inspected regularly.

Protective clothing and respiratory protective equipment shall be maintained for use during both routine and emergency operations. Equipment not provided by the Hanford Fire Department shall be identified in low-hazards and hazardous facility documentation (e.g., building emergency plans/procedures).

11.2.4 Spill Control and Contamination Supplies

Spill control and contamination supplies shall be located in facilities as necessary. Supplies may include absorbent materials for organic or inorganic materials; diatomaceous earth for liquid waste spills; neutralizing sorbents for response to acid or caustic spills; containers and salvage containers (e.g., overpacks); and brooms, shovels, and miscellaneous spill response supplies.

11.2.5 Decontamination Operation Equipment

The T Plant Complex, located in the 200 West Area, provides equipment decontamination services for the Hanford Site that is not time urgent.

11.2.6 Evacuation Vehicles

Building management shall ensure that vehicles are available to move all personnel from their facility. This may be accomplished by a combination of government-owned and private vehicles. If insufficient vehicles are available, the BED can coordinate the response of additional transportation assets through the Hanford EOC.

11.2.7 Hanford Patrol

Hanford Patrol maintains a large inventory of security response equipment, including transportation, weaponry, protective equipment, and communication.

11.2.8 Hanford Fire Department[2]

The Hanford Fire Department maintains a large inventory of firefighting, hazardous material response, and rescue equipment. The Hanford Fire Department also operates the site ambulance service from the various area fire stations. Mutual aid agreements with local fire departments provide additional backup capabilities.

11.3 MAINTENANCE AND TESTING OF ALARM AND COMMUNICATION SYSTEMS

Building management shall ensure that preventive maintenance is performed on facility emergency sirens and criticality alarm systems by the responsible maintenance organizations in accordance with the established preventive maintenance procedures. The site contractor responsible for the Hanford Site Emergency Alerting System and river sirens shall ensure that preventive maintenance is performed in accordance with DOE-0223, *Emergency Plan Implementing Procedures*.

Testing of facility emergency siren and criticality alarm systems, area sirens, the Hanford Site Emergency Alerting System, and river sirens shall be performed in accordance with DOE-0223, *Emergency Plan Implementing Procedures*, to ensure operability.

As applicable, the organization(s) responsible for communications with DOE-HQ and offsite agencies shall test communications systems at least annually or as often as needed to ensure that communication systems are operational.

11.4 INVENTORY OF EMERGENCY EQUIPMENT

Emergency equipment shall be inventoried in accordance with site contractor inventory control procedures to ensure availability in the event of an emergency.

[2] Permit requirement:Subsection 11.2.8, Class 1 Modification 6/30/10

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12.0 TRAINING AND DRILLS

In addition to training that site personnel receive on their day-to-day functions, a comprehensive, coordinated, and documented program of training and drills for developing and/or maintaining specific emergency response capabilities shall be an integral part of the Hanford Site emergency management program. The program shall apply to emergency response personnel and organizations that are expected to respond to onsite emergencies. Training and drills are part of the DOE O 151.1C Operational Emergency Base and Operational Emergency Hazardous Material Programs.

12.1 GENERAL TRAINING REQUIREMENTS

12.1.1 General Employee Training

Initial training and periodic drills shall be provided to all workers who may be required to take protective actions (e.g., assembly, evacuation) when they are employed, when their expected actions change, or when the facility-specific emergency plan/procedure changes. This may be provided through general employee training and participation in drills or exercises.

Refresher training shall be provided annually to Hanford Site employees who are likely to witness a hazardous material release and who are required to notify proper authorities of the release.

In addition, site personnel are provided information on the specific emergency response documentation for their facility. Information is also provided to each employee, which describes the emergency signals, basic instructions, and the emergency response structure. By telephone, site personnel can hear a recording of the emergency signals. Drills and exercises provide additional training for site personnel on the specific actions of their building.

12.2 HANFORD EMERGENCY RESPONSE ORGANIZATION TRAINING REQUIREMENTS

A formal training program shall be provided for the instruction of all personnel (i.e., primary and alternate) comprising the Hanford Site ERO to include both initial training and annual refresher training. Training shall include the requisite National Incident Management System training, as deemed required by position.

Training programs should be systematic and performance based (i.e., based on the analysis of tasks to be performed during an emergency) and developed using performance objectives that place emphasis on team training and facility-specific emergency response scenarios. Training requirements for each ERO position should be identified in a formal training program description or plan. Training methods should include a mix of classroom instruction/training, tabletop exercises or walk-throughs, and drills.

Annual refresher training should include lessons learned from past drills and exercises, changes to plans and procedures, and lessons learned from actual events at DOE and other industrial facilities. Training on changes may need to occur prior to scheduled refresher training to ensure safe and effective response.

12.2.1 Hanford Emergency Operations Center Staff Training

Site personnel assigned to the Hanford EOC shall receive training prior to assignment to an activation list and at least annually thereafter. If requested, offsite personnel with designated positions in the Hanford EOC receive initial orientation training.

12.2.2 Incident Command Organization Training

Personnel working in assigned roles of the Incident Command Organization shall, as applicable, receive incident command and task-specific training or an overview prior to assignment and at least annually thereafter. The training or overview shall include roles, responsibilities, and authorities for the respective position within the Incident Command Organization.

Personnel directing or supervising response actions must be trained for all tasks they assign to be performed and have the same level of qualification for emergency response as the personnel being directed.

12.2.2.1 Facility/Building Emergency Response Organization Training. Minimum training requirements for standard facility/building ERO positions (including designated supplementary personnel) for general purpose, low hazards and hazardous facilities are listed in Table 12-1. Each site contractor shall evaluate, as applicable, the need for additional training, and the training level requirements commensurate with the hazards for each emergency response duty.

12.2.2.2 Site Contractor Emergency Response Personnel Training. Site contractor emergency response personnel requiring certification/qualification are identified as 911 dispatchers, ICs, firefighters performing defensive or offensive operations in the incident scene hazard area, and/or emergency medical personnel. These personnel shall obtain and maintain such certification/qualification.

12.2.2.3 Other Emergency Response Support Personnel Training. Skilled support personnel and specialist employees are not designated members of the Hanford ERO and, as such, are not required to meet specific Hanford ERO training requirements. However, other safety measures or training are required, as delineated in the following subsections, to ensure that such personnel are protected against hazards that may be present at the event scene.

12.2.2.3.1 Skilled Support Personnel. Site support personnel who are skilled in the operation of certain equipment, such as mechanized earth moving or digging equipment or crane and hoisting equipment, and who are needed temporarily to perform immediate emergency support work that will or may expose them to hazards at the event scene shall be given an initial briefing prior to their participation in any emergency response. The initial briefing shall include instruction in the wearing of appropriate personal protective equipment, what hazards are involved, and what duties are to be performed. All other appropriate safety and health precautions shall be used to assure the safety and health of these personnel. This training meets the requirements of 29 CFR 1910.120(q)(4).

12.2.2.3.2 Specialist Personnel. Personnel who, in the course of their regular job duties, work with and are trained in the hazards of specific hazardous (radiological and nonradiological) substances and who will be called upon to provide technical advice or assistance to the IC shall receive training or demonstrate competency in the area of their specialization annually. This training meets the requirements of 29 CFR 1910.120(q)(5).

Table 12-1

Facility/Building Emergency Response Organization Training Requirements

GENERAL PURPOSE FACILITY ERO	
Position	**Required Training**
BED/BW	HAMMER/Hanford training: • General purpose facility[1] OR Contractor developed facility-specific training to address: • An overview of Hanford ICS[1] AND Contractor developed facility-specific training to address: • BED/BW responsibilities[1] • Facility emergency procedures, as applicable[1] • Emergency checklist duties (identified in DOE-0223)[1]
Staging Area Manager Personnel Accountability Aide (or other contractor title for personnel performing the same or similar function)	Contractor developed facility-specific training to include: • Staging Area Manager/Personnel Accountability Aide orientation[1]

[1]Before assignment and annually thereafter

Table 12-1

Facility/Building Emergency Response Organization Training Requirements (cont.)

LOW-HAZARDS FACILITY ERO	
Position	**Required Training**
BED/BW	HAMMER/Hanford training: • Low-hazards facility[1] OR Contractor developed facility-specific training to address: • An overview of Hanford ICS[1] AND Contractor developed facility-specific training to address: • BED/BW responsibilities[1] • Hazard communications and waste management[1] • Facility emergency procedures, Health and Safety Plans, as applicable[1] • Emergency checklist duties (identified in DOE-0223)[1]
Staging Area Manager Personnel Accountability Aide (or other contractor title for personnel performing the same or similar function)	Contractor developed facility-specific training to include: • Staging Area Manager/Personnel Accountability Aide responsibilities[1]
[1]Before assignment and annually thereafter	

Table 12-1

Facility/Building Emergency Response Organization Training Requirements (cont.)

HAZARDOUS FACILITY ERO	
Position	**Required Training**
BED	HAMMER/Hanford training: • BED[1] • Hanford ICS[1] Contractor developed facility-specific training to address: • Hazard communication and waste management[1] • Safety Basis, EPHAs, building emergency plans, etc.[1] • Facility emergency procedures (EALs, emergency response procedures, etc.), as applicable)[1] • Emergency checklist duties (identified in DOE-0223)[1] • Demonstrate proficiency in evaluated drill or exercise[1]
Facility Operations Specialist	HAMMER/Hanford training: • Hanford ICS[1] Contractor developed facility-specific training to include: • Hazard communication and waste management[1] • Building emergency plans[1] • Facility emergency procedures (emergency response procedures, etc.), as applicable[1] • Emergency checklist duties (identified in DOE-0223)[1] • Demonstrate proficiency in evaluated drill or exercise[2]
ICP Communicator ICP Hazards Communicator Hazard Assessor (chemical/radiological)	HAMMER/Hanford training: • Hanford ICS[1] Contractor developed facility-specific training to include: • Hazard communication and waste management[1] • Facility emergency procedures (emergency response procedures, etc.), as applicable[1] • Emergency checklist duties (identified in DOE-0223)[1] • Demonstrate proficiency in evaluated drill or exercise[2]

Table 12-1

Facility/Building Emergency Response Organization Training Requirements (cont.)

HAZARDOUS FACILITY ERO (cont.)	
Position	**Required Training**
Staging Area Manager	HAMMER/Hanford training: • Hanford ICS[1] Contractor developed facility-specific training to include: • Hazard communication and waste management[1] • Facility emergency procedures (emergency response procedures, etc.), as applicable[1] • Emergency checklist duties (identified in DOE-0223) [1]
Personnel Accountability Aide (or other contractor title for personnel performing the same or similar function)	Contractor developed facility-specific training to include: • Personnel Accountability Aide responsibilities[1]
Supplementary ERO personnel (facility personnel that do not have emergency checklist duties identified in DOE-0223 but are assigned to support the facility ERO during event response)	HAMMER/Hanford training: • Hanford ICS[1] OR Contractor developed facility-specific training to include: • An overview of Hanford ICS (e.g., Hanford ICS template or equivalent)[1]

[1]Before assignment and annually thereafter
[2]Annually

12.3 TRAINING PROGRAM EVALUATION

Emergency preparedness training programs shall include evaluation methods to ensure that all emergency response personnel are trained in the program elements pertinent to their position and are able to respond effectively in an emergency.

The effectiveness of the emergency preparedness training program shall be evaluated during the conduct of drills and exercises. Performance shall be documented as part of the drill and exercise critiques and will be used for program improvements.

The programs shall also contain self-assessment activities that analyze overall training program effectiveness. Results of self-assessment activities will be utilized to upgrade and improve the emergency preparedness training program.

12.4 RECORD KEEPING

The emergency preparedness training programs for the Hanford Site will include a consistent, auditable method for maintaining training records. The system will include a means for tracking attendance and for reminding employees when refresher training is needed.

The system should be incorporated into site contractor/site central training record organizations when possible.

12.5 VISITOR ORIENTATION

Visitors such as vendors, subcontractors, consultants, and regulatory agency personnel that are issued a Hanford-specific badge will receive orientation information regarding safety, security, and emergency preparedness requirements prior to entering the Hanford Site. The host for visitors from other DOE sites or Federal agencies possessing a government-issued personal identity verification credential is responsible for escorting the visitors or providing the orientation information.

12.6 OFFSITE TRAINING SUPPORT

No offsite training support has been identified to substitute for existing emergency preparedness training courses. However, emergency response personnel may participate in training opportunities offered by other field elements or offsite agencies that may benefit the emergency response organization.

12.7 OFFSITE PERSONNEL TRAINING

Emergency-related information, transportation information, and training on site-specific conditions and hazards shall be made available to offsite personnel who may be required to participate in response to an emergency at the Hanford Site. The training will be provided in support of, and in conjunction with, the counties, tribes, and states at their request.

Offsite agencies that participate in the Hanford EOC are given the opportunity to participate in training and drills related to their respective functions.

Area hospitals and local ambulance providers receive training on the handling and care of radiologically contaminated patients from Energy Northwest and county emergency management organizations.

12.8 INSTRUCTOR TRAINING AND QUALIFICATION

The emergency preparedness training programs shall identify and document course instructor qualifications. Instructor qualification criteria shall be in accordance with contractor procedures where applicable. Emergency preparedness program managers have the responsibility for qualification of instructors for each course offered. The qualification process shall identify required experience and/or academic requirements for instructors.

12.9 DRILLS

Drills shall be conducted as necessary to ensure that Hanford Site personnel are knowledgeable of response to alarms (e.g., fire, evacuation, take cover, etc.).

Additionally, drills shall provide supervised, "hands-on" training and application sessions for members of the facility/building ERO. These sessions provide an opportunity to demonstrate and maintain individual and organizational proficiency. Drills should be of sufficient scope and frequency to ensure an adequately staffed and trained facility/building ERO. At a minimum, facility/building ERO members shall participate in a drill or exercise at least annually as defined in contractor-specific procedures or other documentation. In order to ensure response proficiency is maintained, drills will be assessed and/or graded to identify and document training needs and areas of less than adequate performance.

12.9.1 Drill Definitions

There are five types of drills conducted at the Hanford Site – protective action, functional, operational, emergency preparedness, and no-notice.

12.9.1.1 Protective Action Drill. Protective action drills focus on employee safety to ensure that facility personnel are knowledgeable of response to alarms, including take cover or an evacuation to a staging area. Examples of such drills include plume release, fire, and bomb threat. Protective action drills may be combined with operational or emergency preparedness drills, or with area-wide take cover or evacuation drills for facilities located on the Hanford Site.

12.9.1.2 Functional Drill. Functional drills involve a specific function of the emergency response organization not normally associated with a specific facility. Examples of a functional drill include field team dispatch and control, Columbia River alerting, Hanford EOC, Hanford EOC Shift Office staff, POC staff, Emergency Duty Officers, and Hanford Fire Department responders.

12.9.1.3 Operational Drill. Operational drills focus on an event that can be mitigated through the use of facility response procedures and allows for the demonstration of nonemergency notifications. Operational drills may also include the use of the appropriate *Emergency Plan Implementing Procedures* (DOE-0223) or other contractor-specific emergency management documentation and may be performed using a tabletop format. The drills should be performed at the direction of the facility/building manager and documented to include concerns or demonstrated lack of knowledge regarding action(s) taken. Examples of operational drills include alarm response, contamination spread, and other applicable operating functions. Operational drills may be evaluated during operational readiness reviews, readiness assessments, conduct of operation assessments, and assessments performed for compliance with DOE O 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities* (if included in contractor contract).

12.9.1.4 Emergency Preparedness Drill. Emergency preparedness drills involve designated facility emergency response personnel and the Hanford Incident Command System. Such drills could include tabletop drills, ICP limited drills, walk-through training drills (controller interaction with players as coaches or instructors), and evaluated drills (no controller interaction with players for coaching or instruction). The type of drill to be conducted shall be clearly communicated to all participants, observers, and evaluators.

Emergency preparedness drills require the use of the appropriate *Emergency Plan Implementing Procedures* (DOE-0223) or other contractor-specific emergency management documentation and, at a minimum, should demonstrate:

- implementation and coordination of facility and/or area (i.e., 100 Area, 200 Area, 300 Area, etc.) protective actions such as take cover or evacuation;
- event recognition and categorization/classification (hazardous facilities only);

- event mitigation;
- emergency and environmental notifications and communications; and
- interface with other Incident Command Organization functions and other affected facilities.

12.9.1.5 No-Notice Drill. No-notice drills are conducted without prior notification to the participants to evaluate response. No-notice drills require implementation of adequate drill controls such as precautions, limitations, simulations, and trained controllers staged at appropriate locations when necessary.

12.9.2 Drill Development and Conduct

Minimum drill requirements are delineated in the following subsections. Additional criteria may be contained in contractor-specific documentation.

12.9.2.1 General Purpose Facilities. Protective action drills shall be conducted at general purpose facilities, as applicable, to meet DOE O 151.1C Operational Emergency Base Program requirements. At a minimum, contractors with such facilities shall conduct building evacuation drills (e.g., fire drill), consistent with Federal regulations (e.g., 41 CFR 102-74-360), local ordinances, or National Fire Protection Association Standards. Drills shall be conducted at least annually to ensure that personnel are able to safely evacuate their work area. In addition, general purpose facility personnel located on the Hanford Site and within a plume exposure EPZ shall participate in a take cover or evacuation drill each calendar year to ensure that facility personnel are knowledgeable of response to alarms. Each contractor is responsible for ensuring that drills are conducted and documented for their respective facilities as applicable.

12.9.2.2 Low-hazards Facilities. Protective action, operational, and emergency preparedness drills shall be conducted at low-hazards facilities, as applicable, to meet DOE O 151.1C Operational Emergency Base Program requirements. Contractors with such facilities shall ensure that personnel are knowledgeable of response to facility-specific alarms and establish a drill program to ensure adequate training and proficiency for all emergency response personnel. Each contractor is responsible for ensuring that drills are conducted and documented for their respective facilities, as applicable.

Drills should be designed to demonstrate proficiency for as many of the following items, as appropriate, for the facility being drilled:

- initial event discovery and notification;
- response to fire and medical emergencies;
- response to spills and releases of hazardous materials including the detection and monitoring of such releases;
- protective actions (including take cover or evacuation);
- activation of the initial ICP;
- personnel accountability;
- event assessment to determine RCRA contingency plan implementation and notification; and
- personnel decontamination.

NOTE: Low-hazards facilities operating under the governing requirements of 29 CFR 1910.38 (i.e., those facilities where personnel evacuate from the danger area when an emergency occurs and are not permitted to assist in handling the emergency) need only meet the annual protective action drill requirement as identified in subsection 12.9.2.1 of this plan.

12.9.2.3 Hazardous Facilities. Protective action, operational, and emergency preparedness drills shall be conducted at hazardous facilities, as applicable, to meet DOE O 151.1C Operational Emergency Hazardous Material Program requirements. Contractors with such facilities shall ensure that facility personnel are knowledgeable of required responses to facility-specific alarms and establish a drill program to ensure adequate training and proficiency for all facility emergency response personnel.

A graded approach to the number, frequency, type, and extent of facility emergency preparedness and functional drills shall be based on the hazards present in the facility or those to which the functional organization would be expected to respond, including severe events with cascading effects[1]. Each contractor required to conduct drills shall develop an annual drill schedule.

Drills should be designed to demonstrate proficiency for as many of the following items, as appropriate, for the facility being drilled:

- initial event discovery and notification;
- response to fire and medical emergencies;
- response to spills and releases of hazardous materials including the detection and monitoring of such releases;
- protective actions (including take cover or evacuation);
- activation of the initial ICP;
- event classification and notification;
- event assessment to determine RCRA contingency plan implementation and notification;
- personnel accountability;
- personnel decontamination; and
- event termination including reentry and recovery.

Each contractor shall identify an emergency preparedness coordinator who is responsible for the design and execution of the facility/contractor emergency preparedness drill program. The responsibilities of the emergency preparedness coordinator include, but are not limited to:

- ensuring the adequacy of the drill package, including the scenario;
- selecting the drill control organization;
- assigning a grade to the drill and issuing the drill report; and
- entering findings into the appropriate commitment tracking system.

[1]Drills that focus on severe events should be conducted periodically and include events that result in hazards from adjacent facilities, if applicable to contractor, and can cause the loss of infrastructure capabilities (e.g., power, communications, support services, etc.).

The emergency preparedness coordinator should serve as the lead controller for emergency preparedness drills whenever possible.

Emergency preparedness drills shall be conducted by a qualified, trained, and experienced control organization. Each contractor shall identify an adequate number of drill coordinators who have successfully completed drill coordinator training or demonstrated equivalent training or experience. Additionally, drill controllers shall be qualified to control areas of performance assigned; and for emergency preparedness and functional drills shall have attended drill controller/evaluator training. Site contractors, however, may authorize equivalent training.

Emergency preparedness and functional drill packages contain, as a minimum:

- drill scope, objectives, and limitations;
- scenario and timeline;
- technical data (e.g., realistic plant conditions, proper source terms, etc.); and
- evaluation criteria.

An evaluated emergency preparedness drill that consists of a drill package identified above, a list of participants, and a facility-level evaluation and critique (drill report) meets the DOE O 151.1C annual facility exercise requirement (see subsection 13.1 of this plan).

Operational and/or emergency preparedness drills shall be conducted with a frequency sufficient to provide proficiency and complete confidence in response capability. Personnel assigned emergency duties should participate in drills covering emergency events or hazardous conditions in their respective facility (e.g., fire, injury, spill, radiological release, loss of power, or loss of ventilation). Where proficiency is not achieved, more than one drill per event or hazardous condition should be considered.

Evacuation drills shall be conducted at least annually for hazardous facilities having a criticality event potential to maintain familiarity with emergency procedures.

12.9.3 Drill Scheduling and Coordination

Drills that require support or resources outside of the facility or project, including the POC, Hanford EOC Shift Office, Hanford Fire Department, Hanford Patrol, Hanford EOC, Hanford Site Emergency Alerting System activation, or MSA drill team, shall be coordinated though the MSA Emergency Management Program. In addition, drills that require Hanford Fire Department and/or Hanford Patrol resources to enter radiological or other areas that require exit controls (i.e., monitoring, sign in/out, etc.) that could delay Hanford Fire Department and/or Hanford Patrol response shall be submitted to Hanford Fire Department and/or Hanford Patrol management for review and written approval prior to conducting the drill.

No-notice drills require coordination with the MSA Emergency Management Program to ensure that appropriate controls are in place to prevent safety, security, or operations-related issues from arising during the conduct of the drill, and to ensure that players fully understand the extent of play required.

12.9.4 Emergency Preparedness and Functional Drill Evaluation

For evaluated emergency preparedness and functional drills, each drill objective shall be graded. The evaluation process and definition of each grade shall be delineated in contractor-specific procedures or other documentation.

A participant critique (debrief or hot wash) shall be conducted as soon as possible following the drill to provide preliminary feedback on objectives and to allow participants to conduct a self-assessment. Areas of inadequate response or improvement should also be addressed.

The emergency preparedness coordinator is responsible for the drill and will receive the report from the lead controller. For evaluated emergency preparedness drills conducted to meet the DOE O 151.1C annual facility exercise requirement, the final drill report shall be submitted to RL SES and the respective DOE Emergency Preparedness office, as applicable.

13.0 EXERCISES

Exercises provide the opportunity for participants to demonstrate their proficiency in assigned emergency response duties, and are used to determine or validate the adequacy of emergency procedures, facilities, equipment, training, and personnel response. As such, each element of the Hanford Site ERO shall participate in a drill or exercise at least annually.

13.1 EXERCISE PROGRAM

The Hanford Site Emergency Exercise Program organization shall establish and maintain a formal exercise program to validate all elements of the Hanford Site emergency management program over a five-year period. Each exercise shall have specific objectives and shall be fully documented (e.g., by scenario packages that include objectives, scope, timelines, injects, controller instructions, and evaluation criteria).

Exercises shall be evaluated as applicable and a critique process, which includes gathering and documenting observations of the participants, shall be established. Corrective action items that are identified as a result of the critique process shall be incorporated into the Hanford Site emergency management program.

The Hanford Site Emergency Exercise Program organization shall exercise the emergency preparedness response capability of selected hazardous facilities annually as designated in the exercise schedule.

> NOTE: Hazardous facilities (or groups of hazardous facilities with a common facility-level ERO) that are not selected in the annual site exercise schedule shall exercise its emergency response capability annually and include at least facility-level evaluation and critique. An evaluated emergency preparedness drill, as delineated in subsection 12.9.2.3 of this plan, meets the DOE O 151.1C annual facility exercise requirement.

Evaluations of annual facility exercises or evaluated emergency preparedness drills by DOE entities (e.g., RL/ORP/PNSO or DOE-HQ organizations) shall be performed periodically so that each facility has external DOE evaluation at least every three years.

Site contractors with hazardous facilities or that have organizations and functions that respond to events shall:

- comply with annual exercise schedule issued by RL Security and Emergency Services (SES);
- support development, conduct, and evaluation of exercises at their facility or involving their functional areas;
- provide members to participate in the scenario development process when their facility or function is involved;
- provide controllers and or evaluators for conduct and evaluation of exercises; and
- require participation by their appropriate staff in exercise and associated training.

The Hanford EOC elements and resources shall participate in one evaluated exercise annually as designated in the exercise schedule. This exercise shall be designed to test and demonstrate the site's integrated emergency response capability. The basis for the exercises shall be rotated among hazardous facilities.

Adherence to Operational Emergency notification and reporting requirements shall be demonstrated in all emergency management exercises.

13.2 EXERCISE DEFINITIONS

There are two types of exercises conducted at the Hanford Site – limited and field. Each exercise is defined in the following subsections.

13.2.1 Limited Exercise

A limited exercise tests and validates the responsibilities of the Incident Command Organization (event scene response), and allows POC, Hanford EOC Shift Office, and Hanford EOC staff to practice their assigned emergency response duties. As such, only the Incident Command Organization is evaluated. There is no offsite involvement.

Communication links, at a minimum, should include the:

- POC;
- Hanford EOC Shift Office;
- IC to the Site Emergency Director;
- ICP Communicator to Event Scene Liaison; and
- ICP Hazards Communicator to the UDAC Hazards Communicator.

The Hanford Site shall conduct three limited exercises per year, unless otherwise directed by RL.

13.2.2 Field Exercise

A field exercise tests and validates the responsibilities of all aspects of the Hanford Site ERO, which includes the Incident Command Organization, Hanford EOC, POC, and the Hanford EOC Shift Office. Offsite involvement may include DOE-HQ, state and county emergency centers, and supporting staff such as radiological field teams. The Hanford Site shall conduct one field exercise per year, unless otherwise directed by RL.

A tabletop or dress rehearsal exercise may be conducted prior to the field exercise. A tabletop exercise allows the Hanford Site ERO and designated offsite responders to work through a scenario in one room, under tabletop conditions, to demonstrate how each facet of a major response organization contributes to an emergency response. A dress rehearsal provides an opportunity for the Hanford Site ERO to work together as a team. No evaluation is conducted for the tabletop or rehearsal exercise.

13.3 EXERCISE DEVELOPMENT AND CONDUCT

Exercises shall be of sufficient scope and frequency to ensure the development and maintenance of an adequate response capability, including severe events with cascading effects[1].

The Hanford Site Emergency Exercise Program organization shall be responsible for:

- developing and maintaining procedures to implement the requirements of the exercise program;
- developing, maintaining, and communicating a five-year and annual schedule of exercises;
- developing and maintaining an exercise objectives matrix that identifies the elements to be tested during the conduct of exercises and determining appropriate objectives based on approved procedures to be tested and verified; and
- providing controller/evaluator training to ensure trained controllers/evaluators are available for exercises.

Exercises that require Hanford Fire Department and/or Hanford Patrol resources to enter radiological or other areas that require exit controls (i.e., monitoring, sign in/out, etc.) that could delay Hanford Fire Department and/or Hanford Patrol response shall be submitted to Hanford Fire Department and/or Hanford Patrol management for review and written approval prior to conducting the exercise.

Proposed goals and objectives shall be provided to RL SES for review prior to each exercise. A scenario shall be developed to ensure that events occur to address the objectives. A draft exercise package shall be submitted to RL SES for review, comment, and approval. The package shall be supported by documentation that contains, but is not limited to, the exercise scope, its objectives and corresponding evaluation criteria, a narrative description of the scenario, timeline, and a list of participants. For field exercises, the approved exercise package is submitted to the Program Secretarial Officer and the DOE-HQ Office of Emergency Operations director for information, preferably 30 days prior to conduct of the field exercise.

Exercise package records shall be maintained in accordance with the DOE Records Schedules and the General Record Schedules published by the National Archives and Records Administration.

13.4 EXERCISE EVALUATION AND CORRECTIVE ACTION

The Hanford Site Emergency Exercise Program organization shall ensure that an evaluation is conducted for each exercise. Exercise evaluations shall be based on specific standards and criteria issued by DOE-HQ.

Exercise evaluation reports must be completed within 30 working days and submitted to RL SES. Evaluation reports for field exercises shall also be submitted to the Program Secretarial Officer, and the DOE-HQ Office of Emergency Operations director.

Corrective action plans for limited and field exercises shall be completed within 30 working days of receipt of the final evaluation report.

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[1]Exercises that focus on severe events should be conducted periodically and include events that impact multiple facilities and can cause the loss of infrastructure capabilities (e.g., onsite and offsite power, communications, roadways, support services, unavailability of mutual aid, etc.).

Completion of exercise corrective actions shall include a verification and validation process, independent of those who performed the corrective actions, that verifies that the corrective action has been put in place and that validates that the corrective action has been effective in resolving the original finding. Corrective actions involving revision of procedures or training should be completed before the next exercise.

A system to formally track exercise deficiencies and weaknesses to completion shall be maintained. Improvement items will be provided to the appropriate organization for implementation as required. A system to provide trending and lessons learned shall also be maintained for exercises.

Quarterly reports shall be provided to RL SES on the status of all formally tracked corrective actions.

13.5 OFFSITE COORDINATION

Offsite agencies, including DOE-HQ, state, local, and appropriate Federal organizations, shall be invited to participate in the annual field exercises (and preparatory tabletop exercise, if conducted). Participation by offsite agencies is dependent upon the scenario and the agencies desired level of participation.

Coordination of offsite participation shall be accomplished through a Scenario Review Group (SRG), which shall meet periodically prior to an exercise to develop the exercise scenario package. Exercise needs of offsite agencies shall be discussed with the SRG and included in the scenario, to the extent possible, without compromising the onsite exercise requirements.

13.6 NO-NOTICE EXERCISES

The Hanford Site shall participate in a program of no-notice exercises, conducted at the discretion of the DOE-HQ Office of Emergency Operations, to determine if the Hanford Emergency Response Organization accomplishes selected objectives based on applicable plans, procedures, and/or other established requirements. Involvement is limited to providing trusted agents and responding when the exercise is conducted, unless otherwise specified by DOE-HQ Office of Emergency Operations.

14.0 PROGRAM ADMINISTRATION

The basic purpose of program administration is to establish and maintain effective organizational management and control of the emergency management program. While ORP/PNSO and its contractors participate in an integrated Hanford Site emergency management program, RL retains the primary responsibility to oversee, coordinate, and assess the emergency management programs of the Hanford Site contractors. RL will ensure the preparation and maintenance of plans and procedures necessary for RL/ORP/PNSO to carry out its responsibilities during an emergency and will schedule through ORP/PNSO any activities (i.e., drills, exercises, assessments) of ORP/PNSO contractors.

14.1 EMERGENCY MANAGEMENT PROGRAM ADMINISTRATOR

The RL Manager has the responsibility for administering the overall Hanford Site emergency management program and has delegated the authority to develop, implement, and maintain the emergency management program to the RL SES director. The RL Emergency Preparedness Program Manager of RL SES carries out these responsibilities. Key program decisions and/or policy changes will be coordinated with ORP/PNSO prior to implementation. The ORP/PNSO Managers have the responsibility for administering their respective field office emergency management program and for participating in the Hanford Site emergency management program.

Each site contractor shall designate an individual to implement site- and contractor-level emergency management program requirements. This individual shall also assist, as necessary, in the development and maintenance of this plan and applicable implementing procedures; development of Emergency Readiness Assurance Plans (ERAP) and annual updates; development and conduct of training and exercise programs; coordination of assessment activities; development of related documentation; and coordination of emergency resources.

14.1.1 Emergency Management Functions at the Richland Operations Office/Office of River Protection/Pacific Northwest Site Office

The RL/ORP/PNSO Emergency Preparedness staff functions, as appropriate to the responsibilities described above, related to overseeing site contractor emergency preparedness programs include:

- ensuring that EPHAs and hazards surveys are adequately performed and documented;
- reviewing and recommending approval of the respective ERAPs, and submitting the ERAP to the respective Program Secretarial Officer and the DOE-HQ Office of Emergency Operations director for inclusion in the annual report;
- assessing facility emergency preparedness programs to verify compliance with appropriate Federal and state directives and policy;
- submitting DOE Order requirement exemption requests, as necessary, for approval by the respective Program Secretarial Officer and Office of Emergency Operations director;
- reviewing exercise packages and exercise evaluation reports for their respective field office; and
- reviewing written reports of evaluations of declared events.

RL Emergency Preparedness Program Manager functions to ensure that RL/ORP/PNSO can carry out its responsibilities in an emergency include:

- assigning a senior emergency preparedness representative to the Emergency Management Advisory Committee;
- revising and updating this plan and the *Emergency Plan Implementing Procedures* (DOE-0223) in accordance with the current version of DOE O 151.1 and other appropriate Federal and state regulations, and ensuring integration within the overall emergency management program;
- implementing and maintaining the Hanford Site emergency exercise program, approving site exercise packages prior to the exercise, and issuing exercise evaluation reports;
- interfacing with Federal, tribal, state, and local emergency management organizations;
- maintaining and negotiating agreements with state and county response agencies, Federal assistance agencies, and maintaining agreements with medical and fire support agencies;
- providing training to state and local emergency response personnel, as requested;
- recruiting and training staff for the Hanford EOC; and
- maintaining the Hanford EOC facility and equipment.

14.2 EMERGENCY READINESS ASSURANCE PROGRAM

The emergency readiness assurance program shall establish a framework and associated mechanisms for assuring that emergency plans, implementing procedures, and resources are adequate by ensuring that they are sufficiently maintained, exercised, and evaluated (including assessment and appraisal) and that appropriate and timely improvements are made in response to needs identified through coordinated and comprehensive emergency planning, training and drills, exercises, and evaluations. The emergency readiness assurance program shall consist of evaluations, improvements, and ERAPs.

14.2.1 Evaluations

Evaluations identify findings in emergency management programs and/or provide assurance that emergency capabilities are sufficient to implement emergency plans. Readiness assurance evaluation activities include program and exercise evaluations, tracking performance indicators, and no-notice exercises.

14.2.1.1 Program Evaluations. Contractors shall conduct an annual self-assessment of their emergency management programs.

RL shall assess the Hanford Site emergency management program annually. In addition, RL/ORP/PNSO shall evaluate the emergency management program of each site contractor under its supervision at least once every three years. RL/ORP/PNSO shall notify the Program Secretarial Officer of its evaluation schedule.

Program evaluations (including appraisals and assessments) shall be based on specific standards and criteria issued by the DOE-HQ Office of Emergency Operations. Program evaluation results shall be documented in the ERAP.

14.2.1.2 Exercise Evaluations. Exercise evaluation requirements are delineated in section 13.4 of this plan.

14.2.1.3 Performance Indicators. RL/ORP/PNSO and its contractors shall participate in a program of performance indicators (including performance measures and metrics) to capture and track objective data regarding the performance of emergency management programs in key functional areas. Performance indicator data shall be collected and subsequently included in annual ERAPs.

14.2.1.4 No-Notice Exercises. No-notice exercise requirements are delineated in section 13.6 of this plan.

14.2.2 Improvements

Appropriate and timely improvements are made in response to needs identified through coordinated emergency planning, program assistance activities, evaluations, training, drills, and exercises.

14.2.2.1 Corrective Actions. The following corrective action requirements supplement those in DOE O 414.1A, *Quality Assurance*. Continuous improvement in the emergency management program results from implementation of corrective actions for findings (e.g., deficiencies, weaknesses) in all types of evaluations, including both internal and external evaluations.

Reports of RL/ORP/PNSO evaluations of site contractor emergency management programs shall be submitted to the Program Secretarial Officer and the Office of Emergency Operations director. Evaluation reports must be completed within 30-working days.

Corrective action plans shall be developed within 30-working days of receipt of the final evaluation report. Corrective actions shall be completed as soon as possible. Corrective actions addressing revision of procedures or training of personnel should be completed before the next annual self-assessment of the program.

Completion of corrective actions shall include a verification and validation process, independent of those who performed the corrective action, that verifies that the corrective action has been put in place, and validates that the corrective action has been effective in resolving the original finding.

14.2.2.2 Lessons Learned. RL/ORP/PNSO and site contractor emergency management programs shall include a system for incorporating, tracking, and trending lessons learned from training, drills, exercises, actual responses, and a site-wide lessons learned program. In addition, RL/ORP/PNSO/and site contractors shall participate in the DOE Corporate Lessons Learned Program.

Lessons learned should be used to determine scope, objectives, and frequency of future drills and exercises.

14.2.3 Emergency Readiness Assurance Plans

RL/ORP and their respective site contractor Emergency Preparedness personnel shall participate in the preparation of a consolidated ERAP. As such, individual facility ERAPS are not provided.

The ERAP is a planning tool to identify and develop needed resources and improvements, and to highlight changes and achievements in the emergency management program. In keeping with 31 U.S.C. 1115 and 1116, the ERAP shall identify what the goals were for the fiscal year that ended (e.g., September 30) and the degree to which these goals were accomplished. This ERAP shall also identify the goals for the next fiscal year (e.g., which starts on October 1).

Site contractor Emergency Preparedness personnel shall submit initial or updated emergency planning and preparedness activities information, as indicated above, to RL SES by September 30 each year, or as otherwise directed by RL SES, for review and inclusion in the consolidated ERAP.

The RL Emergency Preparedness Program Manager shall review and finalize the consolidated ERAP for approval by the RL Manager (or designee). Concurrence from ORP shall be obtained prior to approval by the RL Manager. The consolidated ERAP shall be submitted to the Program Secretarial Officer and DOE-HQ Office of Emergency Operations director by November 30 each year.

PNSO and PNNL shall submit information through the DOE Office of Science as directed.

14.3 DOCUMENT CONTROL

This plan and RL/ORP/PNSO and site contractor implementing procedures shall be controlled distribution documents. RL/ORP/PNSO and site contractors shall use a document control system to ensure that controlled copies are up to date and available at locations where they may be needed in an emergency. RL/ORP/PNSO and site contractors shall determine the internal and external controlled copy distribution of the emergency plan and respective implementing procedures.

14.3.1 Review and Update of the Hanford Emergency Management Plan and Richland Operations Office/Office of River Protection/Pacific Northwest Site Office and Site Contractor Implementing Procedures

This plan and DOE-0223, *Emergency Plan Implementing Procedures*, will be reviewed at least annually. Revision of this plan and DOE-0223 may be initiated at any time deemed necessary and shall be concurred upon by RL/ORP/PNSO and site contractors, as applicable. Plan revisions shall be approved by the RL Manager (or designee). A procedure describing the development, revision, review, and approval process is delineated in DOE-0223.

A controlled copy of the approved plan and DOE-0223 (if requested) shall be submitted to the DOE-HQ Office of Emergency Operations and the Program Secretarial Officer.

Site contractor emergency plans (e.g., building emergency plans) and implementing procedures shall be reviewed at least annually.

14.3.1.1 Review and Update Based on WAC 173-303.[1] Portions of this plan, together with Hanford Site location/activity-specific documentation established to meet contingency plan requirements, must be reviewed and immediately amended, if necessary, whenever:

- applicable regulations or the Hanford Facility RCRA Permit are revised;
- this plan or the location/activity-specific building emergency plan/procedure fails in an emergency;
- the Hanford Site facilities/activities change (e.g., design, operation, maintenance, etc.) in a way that materially increases the potential for fires, explosions, or releases of dangerous waste or dangerous waste constituents, or in a way that changes the response necessary in an emergency; or
- the list of emergency equipment changes.

[1] Permit requirement: Subsection 14.3.1.1, Class [1] 1 Modification 9/30/00

14.3.2 Review of Agreements

Agreements with local, state, and Federal officials and agencies (as contained in Appendix B) are maintained by RL SES and are reviewed periodically (unless otherwise stated) and revised as needed. Updates may be initiated either by RL or by the agreement official or agency. RL SES shall maintain documentation of the review.

14.3.3 Classified Information

RL/ORP/PNSO and site contractors shall ensure that emergency preparedness documents, such as plans, procedures, scenarios, and assessments, are reviewed, as necessary, for classified and Unclassified Controlled Nuclear Information (UCNI) by an authorized derivative classifier or UCNI reviewing official.

14.3.4 Supporting Documents

RL SES shall maintain copies of documents and records that support the emergency management program (i.e., technical data, hazards assessments, ERAPs, and plans and procedures). Records of training, drills, and exercises shall be maintained to document status of the program and provide direction for improvements.

Hanford Site contractors shall maintain records that will provide documentation of the facility emergency preparedness program and to support the preparation of the ERAP, work plans, etc.

14.3.5 Vital Records

A program shall be established to ensure that emergency documents, regardless of media, essential to continued functioning or reconstruction of an organization during and after an emergency, are identified as vital records and managed per 36 CFR 1223, DOE O 243.2, *Vital Records*, and additional contract-specific documents, if applicable. The vital records program ensures the protection and availability of information critical to effective emergency response management.

RL/ORP/PNSO and site contractors shall review their respective emergency documents identified as vital records at least annually to ensure that the documents are up-to-date and immediately accessible, and to determine necessary additions to or deletions from the vital records list.

The *Emergency Plan Implementing Procedures* (DOE-0223) and contractor EPHAs shall be stored at the Hanford EOC (primary and alternate) in paper form so they can be used without reliance on mechanical equipment. Other emergency operating records designated as vital shall be stored at the Hanford EOC (primary and alternate) in electronic format.

14.3.6 Emergency Records

RL/ORP/PNSO and site contractor emergency procedures that contain information for review and reconstruction of major communications and actions taken during a declared emergency shall be regarded as emergency records. These records include, but are not limited to, logs and documentation produced by the respective emergency response organizations (i.e., Incident Command Organization and the Hanford EOC). RL SES shall maintain emergency records generated during the operation of the Hanford EOC and may also request copies of emergency records generated at other emergency response locations.

In addition, provisions shall be in place for the control, monitoring, and maintenance of permanent records of onsite personnel exposures to internal/external radiological and nonradiological hazardous materials in response to emergency conditions. Exposure records shall be stored in accordance with existing site records retention requirements.

14.3.7 Plan Locations[2]

Copies of this plan are maintained at:

- RL and ORP Emergency Preparedness program offices;
- each contractor Emergency Preparedness office and other locations as specified by the respective contractor;
- Hanford Fire Department (area fire stations);
- Hanford EOC Shift Office;
- Hanford Emergency Operations Center (primary and alternate); and
- the Patrol Operations Center.

Copies of the plan are also maintained at the following offsite agencies (per their request) to meet the WAC 173-303-350(4) requirement:

- Pasco Police Department;
- Adams County Sheriff's Office;
- Pasco Fire Department;
- College Place Fire Department;
- Kadlec Regional Medical Center;
- Lourdes Medical Center;
- Trios Health;
- Benton County Emergency Management Center;
- Franklin County Emergency Management Center; and
- Grant County Emergency Management Center.

Copies of location-specific documentation are provided to offsite agencies as requested.

[2] Permit requirement: Subsection 14.3.7, Class 1 Modification 6/30/14

15.0 REFERENCES

Atomic Energy Act of 1954, 42 USC 2011 et seq., Public Law 83-703, as amended.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 USC 9601 et seq.

DOE, 2005, *Comprehensive Emergency Management System*, DOE O 151.1C, U.S. Department of Energy, Washington, D.C.

DOE, 2011, *Accident Investigations*, DOE O 225.1B, U.S. Department of Energy, Washington, D.C.

DOE, 2011, *Occurrence Reporting and Processing of Operations Information*, DOE O 232.2, U.S. Department of Energy, Washington, D.C.

DOE, 2010, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*, DOE O 426.2, U.S. Department of Energy, Washington, D.C.

DOE, 2007, *Emergency Management Guide*, U.S. Department of Energy, Washington, D.C.

DOE, 1992a, *U.S. Department of Energy, Richland Operations Office, Emergency Plan Implementing Procedures*, DOE-0223, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL, 2008, *U.S. Department of Energy Radiological Assistance Program Response Plan Region 8*, DOE/RL-92-49, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

EPA, 1992, *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents*, U.S. Environmental Protection Agency, Washington, D.C.

NFPA 472, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*, National Fire Protection Association, (latest edition).

Resource Conservation and Recovery Act of 1976, 42 USC 6901 et seq.

Superfund Amendment and Reauthorization Act of 1986, 42 USC 11001 et seq.

10 CFR 835.1301, General Provisions et seq.

29 CFR 1910.38, Emergency Action Plans.

29 CFR 1910.120, Hazardous Waste Operations and Emergency Response.

36 CFR 1223, Maintaining Vital Records.

40 CFR 761, Polychlorinated biphenyls (PCB) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions.

41 CFR 102-74-360, What are the specific accident and fire prevention responsibilities of occupant agencies?

49 CFR, Transportation et seq.

WAC 173-303-040, Definitions.

WAC-173-303-090, Dangerous Waste Characteristics.

WAC 173-303-100, Dangerous Waste Criteria.

WAC 173-303-350, Contingency Plan and Emergency Procedures.

WAC 173-303-360, Emergencies.

APPENDIX A

DOCUMENTATION CROSSWALK MATRIX

REQUIREMENT SOURCE	REQUIREMENT DESCRIPTION	HOW IS REQUIREMENT MET?
WAC 173-303-340 Introduction	Preparedness and prevention. Facilities must be designed, constructed, maintained, and operated to minimize the possibility of fire, explosion, or any unplanned sudden or nonsudden release of dangerous waste or dangerous waste constituents to air, soil, or surface or ground water, which could threaten the public health or the environment. This Section describes preparations and preventive measures, which help avoid or mitigate such situations.	The Hanford Site is a singular facility made of individual TSD units.
WAC 173-303-340(1) (Permit requirement)	Required equipment. Required equipment. All facilities must be equipped with the following, unless it can be demonstrated to the department that none of the hazards posed by waste handled at the facility could require a particular kind of equipment specified below: (a) An internal communications or alarm system capable of providing immediate emergency instruction to facility personnel; (b) A device, such as a telephone or a hand-held, two-way radio, capable of summoning emergency assistance from local police departments, fire departments, or state or local emergency response teams; (c) Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment; and (d) Water at adequate volume and pressure to supply water hose streams, foam producing equipment, automatic sprinklers, or water spray systems. All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, must be tested and maintained as necessary to assure its proper operation in time of emergency.	Unit level: Equipment is documented in accordance WAC 173-303-350(3)(e) in Parts III, V, and VI of the Hanford Facility Dangerous Waste Permit (WA7890008967).
WAC 173-303-340(2) (Permit requirement)	Access to communications or alarms. Personnel must have immediate access to the signaling devices described in the situations below: (a) Whenever dangerous waste is being poured, mixed, spread, or otherwise handled, all personnel involved must have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless such a device is not required in subsection (1) of this Section; (b) If there is ever just one employee on the premises while the facility is operating, he must have immediate access to a device, such as a telephone or a hand-held, two-way radio, capable of summoning external emergency assistance, unless such a device is not required in subsection (1) of this Section.	Site personnel are provided access to signaling devices.
WAC 173-303-340(3) (Permit requirement)	Aisle space. The owner or operator must maintain aisle space to allow the unobstructed movement of personnel. Fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, unless it can be demonstrated to the department that aisle space is not needed for any of these purposes.	Unit level: Parts III, V, and VI of the Hanford Facility Dangerous Waste Permit (WA7890008967).
WAC 173-303-340(4) (Permit requirement)	Arrangements with local authorities. The owner or operator must attempt to make the following arrangements, as appropriate for the type of waste handled at his facility and the potential need for the services of these organizations, unless the hazards posed by wastes handled at the facility would not require these arrangements: (a) Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of dangerous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes; (b) Arrangements to familiarize local hospitals with the properties of dangerous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility; (c) Agreements with state emergency response teams, emergency response contractors, and equipment suppliers; and (d) Where more than one party might respond to an emergency, agreements designating primary emergency authority and agreements with any others to provide support to the primary emergency authority.	Site level: DOE/RL-94-02, Sections 3.2.3, 3.3.1, 3.3.2, 3.4, 3.4 1 1, 3.4.1.2, 3.4.1.3, 3.7, and Table 3-1, Memoranda of Understanding.

REQUIREMENT SOURCE	REQUIREMENT DESCRIPTION	HOW IS REQUIREMENT MET?
WAC 173-303-340(5)	Where state or local authorities decline to enter into such agreements, the owner, or operator must document the refusal in the operating record.	Site level: If authorities decline, the documentation will be maintained in the Hanford Facility Operating Record.
WAC 173-303-350(1)	Purpose. The purpose of this Section and WAC 173-303-360 is to lessen the potential impact on the public health and the environment in the event of an emergency circumstance, including a fire, explosion, or unplanned sudden or nonsudden release of dangerous waste or dangerous waste constituents to air, soil, surface water, or ground water by a facility. A contingency plan must be developed to lessen the potential impacts of such emergency circumstances, and the plan must be implemented immediately in such emergency circumstances.	Site level: DOE/RL-94-02 Unit level: Contingency plans for Parts III, V, and VI of the Hanford Facility Dangerous Waste Permit (WA7890008967).
WAC 173-303-350(2)	Each owner or operator must have a contingency plan at his facility. A contingency plan must be developed to lessen the potential impacts of such emergency circumstances, and the plan must be implemented immediately in such emergency circumstances.	Site-level: DOE/RL-94-02 Unit-level: Contingency plans for Parts III, V, and VI of the Hanford Facility Dangerous Waste Permit (WA7890008967).
WAC 173-303-350(3)(a) (Permit requirement)	The contingency plan must contain the following: (a) A description of the actions which facility personnel must take to comply with this Section and WAC 173-303-360;	Site-level: DOE/RL-94-02, Section 1.3.4. Unit-level: Contingency plans for Parts III, V, and VI of the Hanford Facility Dangerous Waste Permit (WA7890008967).
WAC 173-303-350(3)(b) (Permit requirement)	The contingency plan must contain the following: (b) A description of the actions which will be taken in the event that a dangerous waste shipment, which is damaged or otherwise presents a hazard to the public health and the environment, arrives at the facility, and is not acceptable to the owner or operator, but cannot be transported, pursuant to the requirements of WAC 173-303-370(5), Manifest system, reasons for not accepting dangerous waste shipments;	Site-level: DOE/RL-94-02, Section 1.3.4. Unit-level: Contingency plans for Parts III, V, and VI of the Hanford Facility Dangerous Waste Permit (WA7890008967).
WAC 173-303-350(3)(c) (Permit requirement)	The contingency plan must contain the following: (c) A description of the arrangements agreed to by local police departments, fire departments, hospitals, contractors, and state and local emergency response teams to coordinate emergency services as required in WAC 173-303-340(4);	Site-level: DOE/RL-94-02, Sections 3.2.3, 3.3.1, 3.3.2, 3.4, 3.4 1 1, 3.4.1.2, 3.4.1.3, 3.7, and Table 3-1.
WAC 173-303-350(3)(d) (Permit requirement)	The contingency plan must contain the following: (d) A current list of names, addresses, and phone numbers (office and home) of all persons qualified to act as the emergency coordinator required under WAC 173-303-360(1). Where more than one person is listed, one must be named as primary emergency coordinator, and others must be listed in the order in which they will assume responsibility as alternates. For new facilities only, this list may be provided to the department at the time of facility certification (as required by WAC 173-303-810(14)(a)(i)), rather than as part of the permit application;	Site-level: DOE/RL-94-02, Section 2 2, discusses personnel job titles, which will fill duties and responsibilities of the Emergency Coordinator, described in WAC 173-303-360. Unit-level: Contingency plans for Parts III, V, and VI of the Hanford Facility Dangerous Waste Permit (WA7890008967).
WAC 173-303-350(3)(e) (Permit requirement)	The contingency plan must contain the following: (e) A list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems, and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities.	Site-level: DOE/RL-94-02, Section 11 2.8.Unit-level: Contingency plans for Parts III, V, and VI of the Hanford Facility Dangerous Waste Permit (WA7890008967).

REQUIREMENT SOURCE	REQUIREMENT DESCRIPTION	HOW IS REQUIREMENT MET?
WAC 173-303-350(3)(f) (Permit requirement)	The contingency plan must contain the following: (f) An evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe the signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes.	Site-level: DOE/RL-94-02, Figure 7-3, and Table 5-1. Unit-level: Contingency plans for Parts III, V, and VI of the Hanford Facility Dangerous Waste Permit (WA7890008967).
WAC 173-303-350(4) (Permit requirement)	Copies of contingency plan. A copy of the contingency plan and all revisions to the plan shall be: (a) Maintained at the facility; and (b) Submitted to all local police departments, fire departments, hospitals, and state and local emergency response teams that may be called upon to provide emergency services.	Site-level: DOE/RL-94-02, Section 14 3.7.
WAC 173-303-350(5) (Permit requirement)	Amendments. The owner or operator shall review and immediately amend the contingency plan, if necessary, whenever: (a) Applicable regulations or the facility permit are revised; (b) The plan fails in an emergency; (c) The facility changes (in its design, construction, operation, maintenance, or other circumstances) in a way that materially increases the potential for fires, explosions, or releases of dangerous waste or dangerous waste constituents, or in a way that changes the response necessary in an emergency; (d) The list of emergency coordinators changes; or (e) The list of emergency equipment changes.	Site-level: DOE/RL-94-02, Section 14 3 1 1.
WAC 173-303-355(1) (Permit requirement)	Owners or operators must coordinate preparedness and prevention planning and contingency planning efforts, conducted under WAC 173-303-340 and -350 with local emergency planning committees established pursuant to Title III of the 1986 Superfund Amendments and Reauthorization Act.	Site-level: DOE/RL-94-02, Sections 3.1, 3.1.1, and 3.4.
WAC 173-303-355(2)	Appropriate and generally accepted computer models should be utilized to determine the impacts of a potential catastrophic air release due to fire, explosion, or other accidental releases of hazardous constituents. Evacuation plans prepared pursuant to WAC 173-303-350(3)(d) must include those effected persons and areas identified through these modeling efforts.	Site-level: DOE/RL-94-02, Sections 2.2.2.3.3, and 1 3 3 2.
WAC 173-303-360(1) (Permit requirement)	Emergency coordinator. At all times, there must be at least one employee either on the facility premises or on call with the responsibility for coordinating all emergency response measures. This emergency coordinator must be thoroughly familiar with all aspects of the facility's contingency plan, required by WAC 173-303-350(2), all operations and activities at the facility, the location and properties of all wastes handled, the location of all records within the facility, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the contingency plan.	Site-level: DOE/RL-94-02, Section 1.3.4 and 2.2.
WAC 173-303-360(2)(a) (Permit requirement)	Emergency procedures. The following procedures must be implemented in the event of an emergency. (a) Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) must immediately: (i) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and (ii) Notify appropriate state or local agencies with designated response roles if their help is needed.	Site-level: DOE/RL-94-02, Sections 1.3.4 and 5.2.1.
WAC 173-303-360(2)(b) (Permit requirement)	Emergency procedures. (b) Whenever there is a release, fire, or explosion, the emergency coordinator must immediately identify the character, exact source, amount, and areal extent of any released materials.	Site-level: DOE/RL-94-02, Sections 2.2.1.1.2(f) and 2 2 1 1 3(g).
WAC 173-303-360(2)(c) (Permit requirement)	Emergency procedures. (c) Concurrently, the emergency coordinator shall assess possible hazards to human health and the environment (considering direct, indirect, immediate, and long-term effects) that may result from the release, fire, or explosion.	Site-level: DOE/RL-94-02, Section 4.2.

REQUIREMENT SOURCE	REQUIREMENT DESCRIPTION	HOW IS REQUIREMENT MET?
WAC 173-303-360(2)(d) (Permit requirement)	Emergency procedures. (d) If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health or the environment, he must report his findings as follows: (i) If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and (ii) He must immediately notify the department and either the government official designated as the on-scene coordinator, or the National Response Center (using their 24-hour toll free number (800) 424-8802).	Site-level: DOE/RL-94-02, Sections 2.2.1.1.2(a) & (d), 2 2 1 1 3 (a), & (e), 5.1.1, 5 1 1 2, 5 1 2, and 5.1.2.1.
WAC 173-303-360(2)(e) (Permit requirement)	Emergency procedures. (e) His assessment report must include: (i) Name and telephone number of reporter; (ii) Name and address of facility; (iii) Time and type of incident (e.g , release, fire); (iv) Name and quantity of material(s) involved, to the extent known; (v) The extent of injuries, if any; and (vi) The possible hazards to human health or the environment outside the facility.	Site-level: DOE/RL-94-02, Sections 2.2.1.1.2(d), 2 2 1 1 3(e), 5.1.1, 5.1.1.2, and 5.1.2.1.
WAC 173-303-360(2)(f) (Permit requirement)	Emergency procedures. (f) During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other dangerous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting, and containing released waste, and removing or isolating containers.	Site-level: DOE/RL-94-02, Sections 2.2.1.1.2.f and 2 2 1 1 3.g.
WAC 173-303-360(2)(g) (Permit requirement)	Emergency procedures. (g) If the facility stops operations in response to a fire, explosion, or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.	Site-level: DOE/RL-94-02, Sections 2.2.1.1.2.f and 2 2 1 1 3.g.
WAC 173-303-360(2)(h) (Permit requirement)	Emergency procedures. (h) Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.	Site-level: DOE/RL-94-02, Section 9.2.3.
WAC 173-303-360(2)(i) (Permit requirement)	Emergency procedures. (i) The emergency coordinator must ensure that, in the affected area(s) of the facility: (i) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and (ii) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.	Site-level: (i) DOE/RL-94-02, Section 9.2.3. Site-level: (ii) DOE/RL-94-02, Section 11 2.
WAC 173-303-360(2)(j) (Permit requirement)	Emergency procedures. (j) The owner or operator must notify the department, and appropriate local authorities, that the facility is in compliance with (i) of this subsection before operations are resumed in the affected area(s) of the facility.	Site-level: DOE/RL-94-02, Section 5.1.2.3.
WAC 173-303-360(2)(k) (Permit requirement)	Emergency procedures. (k) The owner or operator must note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within fifteen days after the incident, he must submit a written report on the incident to the department. The report must include: (i) Name, address, and telephone number of the owner or operator; (ii) Name, address, and telephone number of the facility; (iii) Date, time, and type of incident (e.g., fire, explosion); (iv) Name and quantity of material(s) involved; (v) The extent of injuries, if any; (vi) An assessment of actual or potential hazards to human health or the environment, where this is applicable; (vii) Estimated quantity and disposition of recovered material that resulted from the incident; (viii) Cause of incident; and (ix) Description of corrective action taken to prevent reoccurrence of the incident.	Site-level: DOE/RL-94-02, Section 5.1.2.2.

REQUIREMENT SOURCE	REQUIREMENT DESCRIPTION	HOW IS REQUIREMENT MET?
40 CFR 761.65(c)(1)(iv) and (c)(7)(ii) SPCC Plans for PCBs	Temporary Storage Areas (less than 30-days). (c)(1)(iv): PCB containers containing liquid PCBs at concentrations of ≥50 ppm, provided a Spill Prevention, Control and Countermeasure Plan has been prepared for the temporary storage area in accordance with part 112 of this chapter and the liquid PCB waste is in packaging authorized in the DOT Hazardous Materials Regulations at 49 CFR parts 171 through 180 or stationary bulk storage tanks (including rolling stock such as, but not limited to, tanker trucks, as specified by DOT). (c)(7)(ii): The owners or operators of any facility using containers described in paragraph (c)(7)(i) of this Section, shall prepare and implement a Spill Prevention Control and Countermeasure (SPCC) Plan as described in Part 112 of this title. In complying with 40 CFR Part 112, the owner or operator shall read "oil(s)" as "PCB(s)" whenever it appears. The exemptions for storage capacity, 40 CFR 112.1(d)(2), and the amendment of SPCC plans by the Regional Administrator, 40 CFR 112.4, shall not apply unless some fraction of the liquids stored in the container are oils as defined by Section 311 of the Clean Water Act.	Site-level: DOE/RL-94-02, Sections 1.1 (fourth paragraph), 1.2 (first bullet, sixth dash and second bullet, fourth dash), and 2.2.1.1.2 (first paragraph). Unit-level: Contingency plans for Parts III, V, and VI of the Hanford Facility Dangerous Waste Permit (WA7890008967).

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APPENDIX B

MEMORANDA OF UNDERSTANDING

This appendix contains copies of memoranda of understanding between the U.S. Department of Energy Richland Operations Office and the agencies listed in the table below.

Agency/Title	Page
State of Washington	3
State of Oregon	9
Benton County	15
Franklin County	21
Grant County	27
Energy Northwest	33
AREVA NP, Inc.	37
Lourdes Medical Center	41
Kadlec Medical Center	45
Kennewick General Hospital	49
Tri-County Mutual Aid Agreement	53
Mutual Law Enforcement Assistance (NOTE: Includes signature pages for Adams, Benton, Franklin, Grant, and Yakima County Sheriffs' Offices; Kennewick, Pasco, Richland, and West Richland Police Departments; and Washington State Patrol)	57
U.S. Fish and Wildlife Service and Mid-Columbia River National Wildlife Refuge Complex	71
Washington Department of Fish and Wildlife	75

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Military Department # U12-004

DOH Contract #N 19907
WSDA Contract # K1057

MEMORANDUM OF UNDERSTANDING
BETWEEN
U.S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE
AND
WASHINGTON STATE
FOR
EMERGENCY PREPAREDNESS

I. PURPOSE

The purpose of this Memorandum of Understanding (MOU) is to describe the areas of cooperation between the State of Washington (State) and the U.S. Department of Energy (DOE), Richland Operations Office (RL) and Office of River Protection (ORP) (hereafter DOE Hanford), in their planning for and response to emergencies (referenced in Hanford Emergency Management Plan, DOE/RL-94-02) at the Hanford Site. It also describes assistance DOE Hanford will provide to the State for other radiological emergencies that originate on, or may affect, the Hanford Site.

The concept of operations, specific responsibilities and requirements that apply to the parties to this MOU are described in their respective emergency response plans and implementing procedures.

II. REFERENCES AND AUTHORITY

Hanford Emergency Management Plan, DOE/RL-94-02

DOE/RL Emergency Plan Implementing Procedures, DOE-0223

National Response Framework (NRF), January 2008

Washington State Integrated Fixed Facility Radiological & Chemical Protection Plan, March 2008

Washington State Emergency Operations Plan (EOP), April 2008

Chapter 38.52, Revised Code of Washington (RCW)

Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, EPA 400-R-92-0001

It is understood that all of the above references are current at the time of this writing. Any future changes to these references will be documented in the annual letter of review.

III. AREA OF RESPONSIBILITY

For the purpose of emergency preparedness planning ONLY, the following definitions of areas of responsibility shall generally apply:

A. DOE Hanford

DOE Hanford is responsible for working with state and local governments to protect public health and safety in the event of an emergency at the Hanford Site. DOE Hanford is responsible for those areas within Hanford Site boundaries as described in Hanford Emergency Management Plan, DOE/RL-94-02, excluding lands north and east of the Columbia River, river islands, lands owned or used by the Bonneville Power Administration, lands leased to Energy Northwest and lands owned or leased

Military Department # U12-004

to the State of Washington. RL shall coordinate all aspects of this agreement on behalf of RL and ORP.

B. State of Washington

Washington State is responsible for safeguarding the citizens, property, environment, and economy in those areas outside the Hanford Site, up to approximately a fifty-mile radius around the Hanford Site, except for portions within the State of Oregon.

IV. RESPONSE

A. Protective Action Criteria

The Protective Action Guides (PAGs) utilized by DOE Hanford to determine emergency classification and associated protective actions for radiological releases will be consistent with those contained in the Washington State Department of Health, Office of Radiation Protection, Radiological Emergency Response Plan and Procedures. The Emergency Response Planning Guides (ERPGs) utilized by DOE Hanford to determine emergency classification and associated protective actions for non-radiological releases will be those developed and approved by the American Industrial Hygiene Association.

B. Protective Action Recommendations

In the early phase of an emergency as defined in the Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, EPA 400-R-92-001, DOE Hanford has the responsibility for consequence assessment and developing associated Protective Action Recommendations (PARs). Consequence assessment and PAR development takes place in the Unified Dose Assessment Center (UDAC) located in the DOE Hanford Emergency Operations Center (EOC). In the early phase, DOE Hanford takes the lead in determining the radioactive plume footprint both onsite and offsite. In the intermediate and late phases the State has responsibility for consequence assessment and developing associated PARs and plume footprint. DOE Hanford will make the resources of the UDAC available to the State in the intermediate and late phases for purposes of dose assessment and PAR development.

C. Protective Action Decisions

DOE Hanford is responsible for making and implementing Protective Action Decisions (PADs) for all personnel within the Hanford Site boundaries. Washington State and affected counties are responsible for making and implementing PADs for emergency workers and the public within affected areas outside Hanford Site boundaries.

D. Radiological Support

As available, DOE Hanford will provide radiological monitoring field teams to assist in the identification of the plume footprint and relocation and food control boundaries. DOE Hanford will also provide radiological monitoring resources to assist the State in conducting monitoring and decontamination of the public at designated boat launches on the Columbia River. If requested, DOE Hanford will provide the State assistance in radiation exposure evaluation. These resources will be provided until other resources are available.

E. Medical Treatment Support

As available, DOE Hanford will provide the State assistance in health hazards assessment and medical treatment advice until such time as other resources are available to assist the State.

F. Exchange of Emergency Information

1. Notifications

DOE Hanford will maintain a Crash telephone and fax machine system, which enables DOE Hanford to provide prompt emergency notifications of events, including emergency classification levels and PARs simultaneously to Washington State Emergency Operations Center and the Hanford plume emergency planning zone (EPZ) counties of Benton, Franklin and Grant. Washington State Military Department, EMD, as the single point of contact for the State, will provide notifications to ingestion EPZ counties and any other state agencies that are procedurally required.

DOE Hanford and the State will provide liaisons to each other's EOCs, as available, to assist in information exchange.

2. Technical Data

As participants in the UDAC, State staff will have access to all technical data. Prior to arrival of State staff, DOE Hanford will transmit technical data directly to the State EOC and plume EPZ counties, as appropriate.

3. Emergency Public Information

During an emergency, media releases from DOE Hanford and the State will be coordinated to the maximum extent practical. DOE Hanford will activate a Joint Information Center (JIC), which is the primary location from which information will be released by DOE Hanford and the offsite agencies represented there. Each agency will focus its statements on issues within its responsibility. DOE Hanford agrees to provide accommodations and timely information within the JIC for the State to fulfill its public information responsibilities.

V. PREPAREDNESS

A. Coordination

DOE Hanford and the State will provide copies of applicable emergency plans and procedures to each other to ensure consistency. DOE Hanford and the State shall meet on an as needed basis to review the status of plans, procedures, agreements, and capabilities that may require revision and/or further development.

B. Exercises

DOE Hanford shall provide an opportunity for State participation in an annual Hanford Site emergency exercise, to the extent negotiated between DOE Hanford and the State. Washington State Emergency Management Division will coordinate the participation of other state agencies, as appropriate.

C. Public Education

Upon request, DOE Hanford will assist the State in the development of educational materials concerning Hanford Site hazards and appropriate actions to be taken by the general public in the event of an emergency at the Hanford Site.

VI. NON-EMERGENCY EVENT INFORMATION

Events may occur on the Hanford Site that do not meet DOE Hanford Emergency Action Level criteria but may generate public concern or could possibly escalate into an emergency. DOE Hanford will notify EMD and the plume EPZ Counties of non-emergency events, called Abnormal Events, in accordance with DOE Hanford plans and procedures. No offsite actions are necessary in response to these non-emergency events.

VII. OTHER EMERGENCIES

In the event of a radiological emergency not occurring at a DOE facility but originating on, or potentially affecting the Hanford Site, DOE Hanford will provide radiological monitoring assistance to the State, as available. These resources will be provided until other resources are available.

In the event a Columbia Generating Station emergency requires evacuation of the Columbia River, DOE Hanford will provide radiological monitoring resources to assist the State in conducting monitoring and decontamination of the public at designated boat launches, in accordance with county and State procedures.

VIII. EFFECTIVE DATE, MODIFICATION AND TERMINATION

Upon execution, this agreement supersedes any and all previous editions. The period of performance of this agreement shall commence as of the final dated signature and full execution of this agreement and end on **February 28, 2018**. The agreement may be amended at any time by mutual written consent of the parties. Any party may terminate this agreement by providing 60 days written notice to the other party. It is also provided that this agreement may be renewed every six years upon written notification by either party of the intent to do so, no later than 30 days before the conclusion of the performance period. Each party will conduct an annual review of the MOU to ensure that it is still appropriate based upon current plans and procedures. If the MOU is found to require significant changes, EMD will coordinate with DOE Hanford to update the MOU. If no significant changes are needed, EMD will coordinate with DOE Hanford to document minor changes that can be incorporated in the next scheduled revision.

IN WITNESS WHEREOF, the PARTIES hereto have executed this AGREEMENT as of the last date written below:

Military Department # U12-004

APPROVED FOR THE STATE OF WASHINGTON

Governor Christine Gregoire — Date: 12/10/12

Assistant Attorney General — Date: 6/20/12

APPROVED FOR THE U.S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE

Matthew McCormick, Manager — Date: 9/28/12

Military Department # U12-004

RECORD OF CONCURRENCE
MEMORANDUM OF UNDERSTANDING
BETWEEN
THE STATE OF WASHINGTON
AND
U.S. DEPARTMENT OF ENERGY-RICHLAND OPERATIONS OFFICE

Bret D. Daugherty, Major General
The Adjutant General
Director, Washington Military Department

11/27/12
Date

Dan Newhouse, Director
Washington State
Department of Agriculture

10/24/2012
Date

Mary Selecky, Secretary
Washington State
Department of Health

10/17/2012
Date

RECEIVED

OCT 17 2012

DOH Contracts Office

Memorandum of Understanding

Between

The U.S. Department of Energy Richland Operations Office

and

The Oregon Department of Energy

for

Emergency Preparedness

I. PURPOSE

This Memorandum of Understanding (MOU) establishes a framework for cooperation and outlines responsibilities between the U.S. Department of Energy (DOE) Richland Operations Office (RL) and Office of River Protection (ORP) (hereafter DOE Hanford) and the Oregon Department of Energy (hereafter Oregon Energy) on behalf of the State of Oregon (hereafter Oregon) for preparedness and response to emergencies at the Hanford Site, a former nuclear production complex located in the State of Washington. This MOU also documents agreements to provide non-emergency event information to Oregon Energy.

An accident involving one of Hanford's facilities could result in the release of radioactive materials into the environment. This could impact Oregon residents, natural resources, agricultural products, and the Columbia River. These facilities include, but are not limited to, hazardous waste processing and storage facilities, underground waste storage tanks and research laboratories.

The responsibilities, requirements, and obligations identified in this MOU are consistent with DOE Hanford's and Oregon's emergency response plans and implementing procedures.

II. AUTHORITY

A. DOE Hanford

DOE Hanford is responsible for working with state and local governments to protect public health and safety in the event of an accident at Hanford. DOE Hanford is responsible for activities that occur in those areas within the Hanford Site boundaries, excluding lands north and east of the Columbia River, river islands, lands owned or used by the Bonneville Power Administration, lands leased to Energy Northwest and lands owned or leased to the State of Washington. DOE RL will coordinate all aspects of this agreement on behalf of DOE RL and DOE ORP.

B. Oregon

The Governor of Oregon is responsible for emergency preparedness and response in Oregon (Oregon Revised Statutes [ORS] 401.035). Oregon Energy has authority and responsibility for emergency preparedness and response to radiological accidents at fixed facilities and nuclear power plants (ORS 469.533) with potential impacts to Oregon. Oregon Energy will coordinate all aspects of this agreement on behalf of its jurisdictions. For Hanford emergencies, this includes portions of Morrow and Umatilla counties that are within 50 miles of the Hanford Site.

III. OBJECTIVES

DOE Hanford and Oregon Energy agree to coordinate their emergency preparedness programs for accidents at Hanford to establish and ensure consistent policies and procedures to:

- Protect public health, safety and the environment, and
- Promote public awareness of and confidence in Oregon's and DOE Hanford's response to an accident.

IV. EMERGENCY RESPONSIBILITIES

In the event of a Hanford Alert, Site Area or General Emergency, as defined in the Hanford Emergency Management Plan DOE/RL-94-02, DOE Hanford will promptly notify Oregon of the event. Notification includes providing the emergency classification and other pertinent information. The Oregon Energy Emergency Operations Center (EOC) and the DOE Hanford EOC will be activated and field teams will be dispatched as appropriate. Oregon Energy will notify and provide information to ingestion counties (Morrow and Umatilla) and make additional notifications as necessary.

Emergency Phase: (Plume)	DOE Hanford will advise Oregon Energy of recommended actions to protect residents as determined in emergency plans and procedures.
Intermediate Phase: (Ingestion)	Oregon Energy and Morrow and Umatilla counties, with the assistance of DOE Hanford, will identify Food Control Areas.
Recovery Phase:	Oregon Energy will direct recovery operations to restore conditions in Morrow and Umatilla counties to the pre-emergency status.

A. Emergency Information

During a Hanford emergency, the exchange of information between DOE Hanford and Oregon Energy will be via commercial telephone, fax machine, and crash telephone system. Oregon Energy may send representatives to the DOE Hanford EOC to facilitate information

exchange. DOE Hanford may send a representative to the Oregon Energy EOC for the same purpose.

- **Notification**

  DOE Hanford is responsible for providing prompt notification to Oregon Energy about emergencies on site. The Hanford Emergency Operations Center (EOC) Shift Office will notify the Oregon Emergency Response System (OERS) via the Crash phone and will also page the Oregon Energy Duty Officer to provide the notification. These notifications will be followed-up by a fax notification.

  Oregon Energy will immediately initiate appropriate notifications as described in the Oregon Columbia Generating Station/Hanford Emergency Response Plan. Upon activation of the Oregon Energy EOC, Oregon Energy will maintain communications with DOE Hanford via the crash line.

  Prior to the activation of DOE Hanford EOC, the EOC Shift Office will provide all essential information to Oregon by fax on an emergency notification form. Once the DOE Hanford EOC is operational, technical data and other important information will be provided from the DOE Hanford EOC.

- **Technical Data**

  Oregon Energy representatives at the Unified Dose Assessment Center (UDAC) will have access to all technical data. Prior to the arrival of Oregon Energy staff, DOE Hanford will transmit technical information directly to the Oregon Energy EOC.

- **Emergency Public Information**

  Emergency information released to the media and the public will be coordinated between DOE Hanford and offsite agencies to the extent practical. DOE Hanford will activate a Joint Information Center (JIC) to coordinate the release of emergency information from DOE Hanford and offsite agencies. Each response organization will focus its news release on issues within its responsibility.

  Oregon Energy will disseminate emergency information regarding Oregon's Protective Action Decisions (PADs) for emergency workers and the public. Morrow and Umatilla counties may also issue news releases or other emergency information. Information on state and local emergency response activities will also be included in the news releases. DOE Hanford will provide timely information and accommodations within the JIC for Oregon Energy representatives to fulfill public information responsibilities.

B. Emergency Measures and Criteria

The emergency measures identified and defined in this section provide for resources and actions necessary to protect the health and safety of emergency workers and the public within the plume and ingestion Emergency Planning Zones in the event of a Hanford accident.

- **Monitoring and Assessment**

DOE Hanford is responsible for monitoring and assessment within the Hanford Site boundaries. DOE Hanford will assist Washington and Oregon with assessment and, as resources are available, with offsite radiological monitoring. DOE Hanford and Oregon Energy will maintain procedures to ensure the coordination of onsite and offsite monitoring and assessment. To ensure the coordination of these activities, DOE Hanford will establish and maintain a UDAC at the DOE Hanford EOC. Oregon Energy representatives responding to the UDAC will work with DOE Hanford staff to determine the magnitude and location of radioactive material releases to the environment.

Emergency Phase:	DOE Hanford takes the lead in determining the radioactive plume footprint both onsite and offsite.
Intermediate Phase:	Oregon Energy takes the lead in determining relocation and Food Control Areas within Oregon. DOE Hanford will continue to provide UDAC staff to assist Oregon activities.

DOE Hanford will provide radiological monitoring field teams, as available, to assist offsite monitoring. DOE Hanford will assist Oregon Energy in identifying and securing additional federal resources if necessary.

- **Protective Actions**

DOE Hanford will assist Oregon Energy in developing ingestion Protective Action Recommendations (PARs) for emergency workers and the public. PARs will be developed based on Oregon's Protective Action Guides (PAGs). Oregon's PAGs are consistent with the Food and Drug Administration PAGs. The PAGs apply the quantity and duration of a radiological release with the analysis of field team and instrumentation data to develop PARs. Prior to the arrival of Oregon Energy staff, DOE Hanford UDAC staff will provide the Oregon Energy EOC with the necessary technical data to develop the PARs.

DOE Hanford is responsible for making and implementing PADs for all personnel within the Hanford Site boundaries. Oregon Energy is responsible for making and implementing PADs for emergency workers and the public offsite within affected areas of Oregon.

- **Recovery/Reentry Operations**

  Onsite recovery/reentry operations will be conducted in accordance with the DOE Hanford Emergency Management Plan and Emergency Implementing Procedures.

  A Recovery/Reentry Decision Group will be established to coordinate offsite activities following emergencies at Hanford as described in the Oregon Columbia Generating Station/Hanford Emergency Response Plan. DOE Hanford will provide a representative and assistance to the Oregon Energy EOC Decision Group upon request.

C. PREPAREDNESS

- **Coordination**

  DOE Hanford and Oregon Energy will meet periodically to review the status of plans, procedures, agreements, and capabilities that may require discussion, revision, and/or further development.

- **Exercises**

  DOE Hanford will provide an opportunity for offsite participation in annual exercises. Oregon Energy will determine the level of participation in the annual DOE Hanford exercise.

- **Public Education**

  Upon request, DOE Hanford will assist Oregon Energy in the development of educational materials concerning radiation, its hazards, and appropriate actions to be taken by the public in the event of a Hanford accident.

V. NON-EMERGENCY EVENT INFORMATION

Events may occur on the Hanford Site that do not meet emergency criteria but may generate public concern or escalate into an emergency. In order to enable Oregon Energy to respond effectively to these events, DOE Hanford will notify Oregon Energy of non-emergency events in accordance with DOE Hanford plans and procedures. Non-emergency events include those that meet criteria for Abnormal Events and Occurrence Reporting. No offsite actions are necessary in response to non-emergency events.

A. Abnormal Events

These events could escalate into emergencies or generate public concern or media interest. The EOC Shift Office will notify Oregon as soon as possible and in all cases within 30 minutes following categorization of the event. The EOC Shift Office will page the Oregon Energy Duty Officer to provide this notification.

B. Occurrence Reports

Occurrence Reports are prepared for incidents that may have some degree of impact on safe facility operations, worker or public safety and health, regulatory compliance, or public/business interests. The EOC Shift Office will send Occurrence Reports to Oregon on a weekly basis.

VI. EFFECT OF THIS MOU

- This MOU is neither a fiscal nor a funds obligation document.
- This Agreement is strictly for internal management purposes for each of the Parties. It is not legally enforceable and shall not be construed to create any legal obligation on the part of any of the Parties. This MOU shall not be construed to provide a private right or cause of action for or by any person or entity. Nonetheless, each Party shall make all reasonable efforts to fulfill its respective emergency responsibilities and comply with all other provisions of this Agreement.
- All agreements herein are subject to, and will be carried out in compliance with, all applicable Federal laws, regulations and other legal requirements.

VII. TERMS OF AGREEMENT

This agreement will become effective upon approval and shall remain in effect until canceled by either party by 30 days prior written notice to the other party. This agreement may be amended or modified only upon written agreement signed by all parties to the agreement.

APPROVED ON BEHALF OF THE OREGON DEPARTMENT OF ENERGY:

Lisa Schwartz, Director

7/16/13
Date

APPROVED FOR THE U.S. DEPARTMENT OF ENERGY RICHLAND OPERATIONS OFFICE:

Matt McCormick, Manager

7/1/13
Date

REVISED 082511

MEMORANDUM OF UNDERSTANDING BETWEEN U.S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE AND BENTON COUNTY EMERGENCY SERVICES FOR EMERGENCY PREPAREDNESS

I. PURPOSE

The purpose of this Memorandum of Understanding (MOU) is to describe the areas of cooperation between Benton County and its incorporated jurisdictions and the U.S. Department of Energy (DOE), Richland Operations Office (RL) and Office of River Protection (ORP) (hereafter DOE Hanford), in their planning for and response to emergencies at the Hanford Site. It also describes assistance DOE Hanford will provide to Benton County for other radiological emergencies that originate on, or may affect, the Hanford Site.

The concept of operations, specific responsibilities and requirements that apply to the parties to this MOU are described in detail in their respective emergency response plans and procedures.

II. AREAS OF RESPONSIBILITY

For the purpose of emergency preparedness planning ONLY, the following definitions of areas of responsibility shall generally apply:

A. Benton County

This agreement applies to Benton County and its incorporated jurisdictions. Benton County Emergency Services (BCES), as an interlocal government agency under RCW 39.34, is responsible for emergency management activities and shall coordinate all aspects of this agreement on behalf of the jurisdictions within Benton County.

B. DOE Hanford

DOE Hanford is responsible for those areas within Hanford Site boundaries, excluding lands north and east of the Columbia River, river islands, lands owned or used by the Bonneville Power Administration, lands leased to Energy Northwest and lands owned or leased to the State of Washington. RL shall coordinate all aspects of this agreement on behalf of RL and ORP.

III. RESPONSE

A. Protective Action Criteria

The Protective Action Guides (PAGs) utilized by DOE Hanford to determine emergency classification and associated protective actions for radiological releases will be consistent with those contained in the *Washington State Department of Health, Division of Radiation Protection, Radiological Emergency Response Plan and Procedures*. The protective action criteria utilized by DOE Hanford to determine emergency classification and associated protective actions for non-radiological releases will be, listed in order of preference, Acute Exposure Guideline Levels (AEGLs) promulgated by the U.S. Environmental Protection Agency (EPA), Emergency Response Planning Guidelines (ERPGs) published by the American Industrial Hygiene Association, and Temporary Emergency Exposure Limits (TEELs) developed by DOE's Subcommittee on Consequence Assessment and Protective Actions.

B. Protective Action Recommendations

In the early phase of an emergency, DOE Hanford has the responsibility for dose assessment and developing associated Protective Action Recommendations (PARs) to provide to BCES. Dose assessment and PAR development takes place in the Unified Dose Assessment Center (UDAC) located in the DOE Hanford Emergency Operations Center (EOC). In the intermediate and late phases, Washington State has responsibility for dose assessment and developing associated PARs to provide to BCES. DOE Hanford will make the resources of the UDAC available to Washington State in the intermediate and late phases for purposes of dose assessment and PAR development.

C. Radiological Support

As available, DOE Hanford will provide radiological monitoring field teams to assist in the identification of the plume footprint and relocation and food control boundaries in Benton County. DOE Hanford will also provide radiological monitoring resources to assist Washington State in conducting monitoring and decontamination of the public at designated boat launches on the Columbia River. These resources will be provided until other resources are available.

D. Columbia River Alerting

DOE Hanford will maintain ten emergency sirens along the Columbia River, located between the Vernita Bridge and the Old Hanford Townsite, to alert boaters that may be on the river in the event of an emergency. Benton, Franklin, and Grant Counties will be responsible to determine when to alert the boaters and to activate the siren system. In order to facilitate siren activation by the Counties, DOE Hanford will maintain siren control stations at the Benton and Franklin County EOCs. In the event that the Benton and Franklin County EOCs are unable to activate the sirens, activation will be performed by DOE Hanford at the direction of the Counties. Upon request, DOE Hanford will provide personnel in boats to respond to designated

locations to warn boaters to avoid the evacuated area.

Special projects on the Hanford Site may require DOE Hanford to have the capability to provide emergency warning to boaters on the Columbia River with DOE's own resources. In the event of an emergency at one of these special projects, DOE will assume responsibility to warn boaters and control access to the potentially affected area of the river. Benton, Franklin or Grant Counties will provide personnel in boats to relieve Hanford resources as available. As part of the special project planning, DOE Hanford will coordinate with Benton, Franklin and Grant Counties to revise emergency procedures to enable DOE Hanford to activate the emergency river sirens and send DOE resources to warn boaters.

E. Exchange of Emergency Information

1. Notifications

DOE Hanford will maintain a Crash telephone system, which enables DOE Hanford to provide prompt emergency notifications and protective action recommendations to BCES. Southeast Communications will be the single point of contact for BCES until the Benton County EOC is declared operational.

DOE Hanford and BCES will provide liaisons to each other's EOCs, as available, to assist in information exchange.

2. Emergency Public Information

During an emergency, media releases from DOE Hanford and BCES will be coordinated to the maximum extent practical. DOE Hanford will activate a Joint Information Center (JIC), which is the primary location from which information will be released by DOE Hanford and the offsite agencies represented there. Each agency will focus its statements on issues within its responsibility. DOE Hanford agrees to provide accommodations and timely information within the JIC for BCES and/or Benton County to fulfill its public information responsibilities.

IV. PREPAREDNESS

A. Coordination

DOE Hanford and BCES will provide copies of applicable emergency plans and procedures to each other to ensure consistency. DOE Hanford and BCES shall meet periodically to review the status of plans, procedures, agreements, and capabilities that may require revision and/or further development.

B. Exercises

DOE Hanford shall provide an opportunity for BCES participation in an annual exercise, to the extent negotiated between DOE Hanford and BCES. BCES will coordinate the participation of emergency response organizations within the County.

C. Public Education

Upon request, DOE Hanford will assist BCES in the development of educational materials concerning Hanford hazards and appropriate actions to be taken by the general public in the event of an emergency at the Hanford Site.

V. OTHER EMERGENCIES

In the event a Columbia Generating Station emergency requires evacuation of the Columbia River, DOE Hanford will provide radiological monitoring resources to assist Washington State in conducting monitoring and decontamination of the public at designated boat launches. At the request of BCES, DOE Hanford will provide personnel and boats to designated locations to warn boaters to avoid the evacuated area.

VI. TERMS OF AGREEMENT

This agreement will become effective upon signature and will continue until it is canceled by any party in writing with at least thirty (30) days advance notice to the other parties. This agreement may be amended or modified only upon written agreement signed by all parties to the agreement.

APPROVED AS TO FORM

Attorney
City of Richland /BCES

8/26/14
Date

APPROVED FOR BENTON COUNTY EMERGENCY SERVICES

Chairman
Benton County Emergency Services Executive Board

8/25/11
Date

APPROVED FOR THE U.S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE

Matt S. McCormick, Manager

11/28/11
Date

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MEMORANDUM OF UNDERSTANDING BETWEEN U.S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE AND FRANKLIN COUNTY FOR EMERGENCY PREPAREDNESS

I. PURPOSE

The purpose of this Memorandum of Understanding (MOU) is to describe the areas of cooperation between Franklin County and its incorporated jurisdictions and the U.S. Department of Energy, Richland Operations Office (RL) and Office of River Protection (ORP) (hereafter DOE Hanford), in their planning for and response to emergencies at the Hanford Site. It also describes assistance DOE Hanford will provide to Franklin County, for other radiological emergencies that originate on, or may affect, the Hanford Site.

The concept of operations, specific responsibilities and requirements that apply to the parties to this MOU are described in their respective emergency response plans and procedures.

II. AREAS OF RESPONSIBILITY

For the purpose of emergency preparedness planning ONLY, the following definitions of areas of responsibility shall generally apply:

A. Franklin County

This agreement applies to Franklin County and its incorporated jurisdictions. Franklin County Emergency Management, as the political subdivision of Franklin County responsible for emergency management activities, shall coordinate all aspects of this agreement on behalf of the jurisdictions within Franklin County.

B. DOE Hanford

DOE Hanford is responsible for those areas within Hanford Site boundaries, excluding lands north and east of the Columbia River, river islands, lands owned or used by the Bonneville Power Administration, lands leased to Energy Northwest and lands owned or leased to the State of Washington. RL shall coordinate all aspects of this agreement on behalf of RL and ORP.

III. RESPONSE

A. Protective Action Criteria

The Protective Action Guides (PAGs) utilized by DOE Hanford to determine emergency classification and associated protective actions for radiological releases will be consistent with those contained in the *Washington State Department of Health, Division of Radiation Protection, Radiological Emergency Response Plan and Procedures.* The protective action criteria utilized by DOE Hanford to determine emergency classification and associated protective actions for non-radiological releases will be, listed in order of preference, Acute Exposure Guideline Levels (AEGLs) promulgated by the U.S. Environmental Protection Agency (EPA), Emergency Response Planning Guidelines (ERPGs) published by the American Industrial Hygiene Association, and Temporary Emergency Exposure Limits (TEELs) developed by DOE's Subcommittee on Consequence Assessment and Protective Actions.

B. Protective Action Recommendations

In the early phase of an emergency DOE Hanford has the responsibility for dose assessment and developing associated Protective Action Recommendations (PARs) to provide to Franklin County. Dose assessment and PAR development takes place in the Unified Dose Assessment Center (UDAC) located in the DOE Hanford Emergency Operations Center (EOC). In the intermediate and late phases Washington State has responsibility for dose assessment and developing associated PARs to provide to Franklin County. DOE Hanford will make the resources of the UDAC available to Washington State in the intermediate and late phases for purposes of dose assessment and PAR development.

C. Radiological Support

As available, DOE Hanford will provide radiological monitoring field teams to assist in the identification of the plume footprint and relocation and food control boundaries in Franklin County. DOE Hanford will also provide radiological monitoring resources to assist Washington State in conducting monitoring and decontamination of the public at designated boat launches on the Columbia River. These resources will be provided until other resources are available.

D. Columbia River Alerting

DOE Hanford will maintain ten emergency sirens along the Columbia River, located between the Vernita Bridge and the Old Hanford Townsite, to alert boaters that may be on the river in the event of an emergency. Benton, Franklin and Grant Counties will be responsible to determine when to alert the boaters and to activate the siren system. In order to facilitate siren activation by the Counties, DOE Hanford will maintain siren control stations at the Benton and Franklin County EOCs. In the event that the Benton and Franklin County EOCs are unable to activate the sirens, activation will be performed by DOE Hanford at the direction of the Counties. Upon

request, DOE Hanford will provide personnel in boats to respond to designated locations to warn boaters to avoid the evacuated area.

Special projects on the Hanford Site may require DOE Hanford to have the capability to provide emergency warning to boaters on the Columbia River with DOE's own resources. In the event of an emergency at one of these special projects, DOE will assume responsibility to warn boaters and control access to the potentially affected area of the river. Benton, Franklin or Grant Counties will provide personnel in boats to relieve Hanford resources as available. As part of the special project planning, DOE Hanford will coordinate with Benton, Franklin and Grant Counties to revise emergency procedures to enable DOE Hanford to activate the emergency river sirens and send DOE Hanford resources to warn boaters.

E. Exchange of Emergency Information

1. Notifications

DOE Hanford will maintain a CRASH telephone system, which enables DOE Hanford to provide prompt emergency notifications and protective action recommendations to Franklin County. Franklin County Dispatch will be the single point of contact for Franklin County until the Franklin County EOC is declared operational.

DOE Hanford and Franklin County will provide liaisons to each other's EOCs, as available, to assist in information exchange.

2. Emergency Public Information

During an emergency, media releases from DOE Hanford and Franklin County will be coordinated to the maximum extent practical. DOE Hanford will activate a Joint Information Center (JIC), which is the primary location from which information will be released by DOE Hanford and the offsite agencies represented there. Each agency will focus its statements on issues within its responsibility. DOE Hanford agrees to provide accommodations and timely information within the JIC for Franklin County to fulfill its public information responsibilities.

IV. PREPAREDNESS

A. Coordination

DOE Hanford and Franklin County will provide copies of applicable emergency plans and procedures to each other to ensure consistency. DOE Hanford and Franklin County shall meet periodically to review the status of plans, procedures, agreements, and capabilities that may require revision and/or further development.

B. Exercises

DOE Hanford shall provide an opportunity for Franklin County participation in an annual exercise, to the extent negotiated between DOE Hanford and Franklin County. Franklin County will coordinate the participation of emergency response organizations within the County.

C. Public Education

Upon request, DOE Hanford will assist Franklin County in the development of educational materials concerning Hanford hazards and appropriate actions to be taken by the general public in the event of an accident at the Hanford Site.

V. OTHER EMERGENCIES

In the event a Columbia Generating Station emergency requires evacuation of the Columbia River, DOE Hanford will provide radiological monitoring resources to assist Washington State in conducting monitoring and decontamination of the public at designated boat launches. At the request of Franklin County, DOE Hanford will provide personnel and boats to designated locations to warn boaters to avoid the evacuated area.

VI. TERMS OF AGREEMENT

This agreement will become effective upon signature and will continue until it is canceled by either party in writing with at least thirty (30) days advance notice to the other party. This agreement may be amended or modified only upon written agreement signed by all parties to the agreement.

APPROVED AS TO FORM

Shawn Sant, Prosecuting Attorney — Date 12/1/2011

APPROVED FOR FRANKLIN COUNTY

Matt Watkins, Chairman
Franklin County Emergency Management Executive Board — Date 12/9/11

APPROVED FOR THE U.S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE

Matt S. McCormick, Manager — Date 12/28/11

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MEMORANDUM OF UNDERSTANDING BETWEEN U.S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE AND GRANT COUNTY FOR EMERGENCY PREPAREDNESS

I. PURPOSE

The purpose of this Memorandum of Understanding (MOU) is to describe the areas of cooperation between Grant County and its incorporated jurisdictions and the U.S. Department of Energy (DOE), Richland Operations Office (RL) and Office of River Protection (ORP) (hereafter DOE Hanford), in their planning for and response to emergencies at the Hanford Site. It also describes assistance DOE Hanford will provide to Grant County for other radiological emergencies that originate on, or may affect, the Hanford Site.

The concept of operations, specific responsibilities and requirements that apply to the parties to this MOU are described in detail in their respective emergency response plans and procedures.

II. AREAS OF RESPONSIBILITY

For the purpose of emergency preparedness planning ONLY, the following definitions of areas of responsibility shall generally apply:

A. Grant County

This agreement applies to Grant County and its incorporated jurisdictions. Grant County Emergency Management shall coordinate all aspects of this agreement on behalf of the jurisdictions within Grant County.

B. DOE Hanford

DOE Hanford is responsible for those areas within Hanford Site boundaries, excluding lands north and east of the Columbia River, river islands, lands owned or used by the Bonneville Power Administration, lands leased to Energy Northwest and lands owned or leased to the State of Washington. RL shall coordinate all aspects of this agreement on behalf of RL and ORP.

III. RESPONSE

A. *Protective Action Criteria*

The Protective Action Guides (PAGs) utilized by DOE Hanford to determine emergency classification and associated protective actions for radiological releases will be consistent with those contained in the Washington State Department of Health, Division of Radiation Protection, Radiological Emergency Response Plan and Procedures. The protective action criteria utilized by DOE Hanford to determine emergency classification and associated protective actions for non-radiological releases will be, listed in order of preference, Acute Exposure Guideline Levels (AEGLs) promulgated by the U.S. Environmental Protection Agency (EPA), Emergency Response Planning Guidelines (ERPGs) published by the American Industrial Hygiene Association, and Temporary Emergency Exposure Limits (TEELs) developed by DOE's Subcommittee on Consequence Assessment and Protective Actions.

B. *Protective Action Recommendations*

In the early phase of an emergency DOE Hanford has the responsibility for dose assessment and developing associated Protective Action Recommendations (PARs) to provide to Grant County. Dose assessment and PAR development takes place in the Unified Dose Assessment Center (UDAC) located in the DOE Hanford Emergency Operations Center (EOC). In the intermediate and late phases, Washington State has responsibility for dose assessment and developing associated PARs to provide to Grant County. DOE Hanford will make the resources of the UDAC available to Washington State in the intermediate and late phases for purposes of dose assessment and PAR development.

C. *Radiological Support*

As available, DOE Hanford will provide radiological monitoring field teams to assist in the identification of the plume footprint and relocation and food control boundaries in Grant County. DOE Hanford will also provide radiological monitoring resources to assist Washington State in conducting monitoring and decontamination of the public at designated boat launches on the Columbia River. These resources will be provided until other resources are available.

D. *Columbia River Alerting*

DOE Hanford will maintain ten emergency sirens along the Columbia River, located between the Vernita Bridge and the Old Hanford Townsite, to alert boaters that may be on the river in the event of an emergency. Benton, Franklin and Grant Counties will be responsible to determine when to alert the boaters and to activate the siren system. In order to facilitate siren activation by the Counties, DOE Hanford will maintain siren control stations at the Benton and Franklin County EOCs. In the event that the Benton and Franklin County EOCs are unable to activate the sirens, activation will be performed by DOE Hanford at the direction of the Counties. Upon request, DOE Hanford will provide personnel in boats to respond to designated

locations to warn boaters to avoid the evacuated area.

Special projects on the Hanford Site may require DOE Hanford to have the capability to provide emergency warning to boaters on the Columbia River with DOE's own resources. In the event of an emergency at one of these special projects, DOE will assume responsibility to warn boaters and control access to the potentially affected area of the river. Benton, Franklin or Grant Counties will provide personnel in boats to relieve Hanford resources as available. As part of the special project planning, DOE Hanford will coordinate with Benton, Franklin and Grant Counties to revise emergency procedures to enable DOE Hanford to activate the emergency river sirens and send DOE Hanford resources to warn boaters.

E. Exchange of Emergency Information

1. Notifications

DOE Hanford will maintain a Crash telephone system, which enables DOE Hanford to provide prompt emergency notifications and protective action recommendations to Grant County. The Multi-Agency Communications Center will be the single point of contact for Grant County until the Grant County EOC is declared operational.

DOE Hanford and Grant County will provide liaisons to each other's EOCs, as available, to assist in information exchange.

2. Emergency Public Information

During an emergency, media releases from DOE Hanford and Grant County will be coordinated to the maximum extent practical. DOE Hanford will activate a Joint Information Center (JIC), which is the primary location from which information will be released by DOE Hanford and the offsite agencies represented there. Each agency will focus its statements on issues within its responsibility. DOE Hanford agrees to provide accommodations and timely information within the JIC for Grant County to fulfill its public information responsibilities.

IV. PREPAREDNESS

A. Coordination

DOE Hanford and Grant County will provide copies of applicable emergency plans and procedures to each other to ensure consistency. DOE Hanford and Grant County shall meet periodically to review the status of plans, procedures, agreements, and capabilities that may require revision and/or further development.

B. Exercises

DOE Hanford shall provide an opportunity for Grant County participation in an annual exercise to the extent negotiated between DOE Hanford and Grant County. Grant

County will coordinate the participation of emergency response organizations within the County.

C. *Public Education*

Upon request, DOE Hanford will assist Grant County in the development of educational materials concerning Hanford hazards and appropriate actions to be taken by the general public in the event of an accident at the Hanford Site.

V. OTHER EMERGENCIES

In the event a Columbia Generating Station emergency requires evacuation of the Columbia River, DOE Hanford will provide radiological monitoring resources to assist Washington State in conducting monitoring and decontamination of the public at designated boat launches. At the request of Grant County, DOE Hanford will provide personnel and boats to designated locations to warn boaters to avoid the evacuated area.

VI. TERMS OF AGREEMENT

This agreement will become effective upon signature and will continue until it is canceled by either party in writing with at least thirty (30) days advance notice to the other party. This agreement may be amended or modified only upon written agreement signed by all parties to the agreement.

APPROVED AS TO FORM

Derek A Lee, Prosecuting Attorney

Date 11/30/11

APPROVED FOR GRANT COUNTY

Carolann Swartz, Chairperson
Grant County Board of Commissioners

Date 12/5/11

APPROVED FOR THE U.S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE

Matt S. McCormick, Manager

Date 12/29/11

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MEMORANDUM OF UNDERSTANDING BETWEEN ENERGY NORTHWEST AND U.S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE, FOR EMERGENCY PREPAREDNESS AND RESPONSE

I. PURPOSE

This memorandum of understanding (MOU) reaffirms the established framework of cooperation between Energy Northwest and the U.S. Department of Energy (DOE), Richland Operations Office (RL) and Office of River Protection (ORP) (hereafter referred to as DOE Hanford), in the planning for and response to emergencies at the Hanford Site. Fire and ambulance response is covered under a separate agreement.

II. BACKGROUND

Emergencies occurring at Hanford facilities or the Columbia Generating Station may affect other facilities on the Hanford Site. In addition, both parties actively coordinate emergency preparedness activities and provide support to some of the same local and state agencies, which present further opportunities for coordination and resource sharing.

The Columbia Generating Station Site is defined as the 1.2 mile Exclusion Area plus the pipeline corridor leading to the Columbia River pump house.

The Hanford Site is defined as those areas within the Hanford Site boundaries, excluding lands north and east of the Columbia River, river islands, lands owned or used by the Bonneville Power Administration, lands leased to Energy Northwest, and lands owned or leased to the State of Washington.

III. OBJECTIVE

The objective of this MOU is to identify responsibilities and areas of cooperation and assistance that may be provided for emergency preparedness and response.

IV. RESPONSIBILITIES

DOE Hanford is responsible for direction and overview for all emergency response actions required within the Hanford Site, as defined above. DOE-RL shall coordinate all aspects of this agreement on behalf of DOE-RL and DOE-ORP.

Energy Northwest is responsible for direction and overview of emergency response actions required on the Columbia Generating Station Site. Both parties are responsible to provide prompt notification to designated points of contact and, as necessary, protective action recommendations to the other in the event of an emergency at their facilities.

V. IMPLEMENTATION

A. Communications

Energy Northwest will use existing DOE Hanford communications systems through the Patrol Operations Center (POC) and Occurrence Notification Center (ONC) for emergency communications between Energy Northwest and DOE Hanford. Energy Northwest will provide emergency communications capabilities in the form of a radio link to the POC and DOE Hanford Emergency Operations Center (EOC), and a special telephone circuit between Energy Northwest facilities and POC, DOE Hanford EOC, Benton County EOC, Franklin County EOC, and the State of Washington. DOE Hanford will provide emergency communications capabilities in the form of a special telephone circuit between POC, ONC, and DOE Hanford EOC and Energy Northwest EOF, Benton County EOC, Franklin County EOC, Grant County EOC, the State of Washington, and the State of Oregon. DOE Hanford and Energy Northwest will participate in periodic testing, as necessary, to assure operation of the communications capabilities and to meet any regulatory requirement for this function.

Energy Northwest will allow DOE Hanford radio control access to Energy Northwest's radiological field team radio repeater located on Rattlesnake Ridge. DOE Hanford will provide the leased circuits, interface equipment, and radio control unit necessary to implement this function. DOE Hanford will participate in periodic testing of the system to assure operational readiness and compliance with regulatory requirements.

Energy Northwest and DOE provide equipment to Benton and Franklin Counties for activation control of DOE and Energy Northwest Columbia River sirens. In order to minimize the equipment necessary for the Counties to simultaneously activate both DOE and Energy Northwest river sirens, it is agreed that all the river sirens and associated siren control equipment will operate on the same radio frequencies as the Energy Northwest river sirens. Energy Northwest will maintain the FCC radio frequency licenses for its sirens and DOE will maintain the NTIA radio frequency authorizations for the 10 DOE-owned river sirens which will operate on the same frequencies as the Energy Northwest river sirens.. DOE will maintain the joint river siren control equipment at Benton and Franklin Counties while Energy Northwest will maintain the radio equipment at both sites. The Hanford ONC will obtain approval from Energy Northwest for any changes to the encoding system or test plans.

B. Emergency Facilities and Equipment

Mutual assistance, as needed and available, will be provided in the areas of facilities and equipment for personnel decontamination, first aid, evacuation reassembly areas, respiratory protective equipment, radiological protective clothing, vehicles, radiological survey instruments,and resources for river alerting.

C. Treatment of Radiologically Contaminated Persons

DOE Hanford will provide assistance, as requested and available, in treatment of radiologically contaminated or exposed, injured patients. Assistance will be provided by DOE Hanford contractors specializing in medical treatment and exposure/uptake evaluation.

D. Radiation Control and Meteorology Data

Environmental and meteorology data and radiological release evaluation data will be exchanged. If the emergency is at a DOE Hanford facility or outside the Columbia Generating Station Site, DOE Hanford will have responsibility for primary dose assessment, development of protective action recommendations, and field team control. If the emergency originates at the Columbia Generating Station Site, Energy Northwest will have responsibility for dose assessment and development of protective action recommendations. DOE will retain field team control responsibilities on the Hanford Site. Due to DOE Hanford's unique ownership of Hanford facilities and properties, DOE Hanford shall participate, along with Energy Northwest and the State of Washington in the development of joint dose assessment and protective action recommendations and coordination of field teams in Energy Northwest's Meteorological Unified Dose Assessment Center.

E. Training and Exercises

Coordination of training and exercise opportunities is encouraged. Energy Northwest and DOE Hanford shall coordinate exercises and training opportunities as appropriate.

F. Public Information

In cooperation with Benton and Franklin Counties, DOE Hanford and Energy Northwest will jointly assist these counties in the development of educational materials concerning the emergency preparedness program for the Hanford Site and the Columbia Generating Station Site, including information regarding appropriate actions to be taken by the general public in the event of an emergency.

G. Emergency Public Information

If the emergency originates on the Hanford Site, outside the Columbia Generating Station Site, DOE Hanford will have primary emergency public information responsibility. If the emergency originates at the Columbia Generating Station Site, Energy Northwest will have the primary emergency public information responsibility. DOE Hanford and Energy Northwest shall participate as partners in the Energy Northwest or DOE Hanford Joint Information Center.

VI. LIMITATIONS

The specific areas of assistance, as defined above, will be provided based on availability, and are limited to those actions necessary to protect onsite personnel, the public health and safety, and the environment in the event of an emergency at the Hanford Site and/or the Columbia Generating Station Site.

VII COST RECOVERY

When the parties to this MOU agree to provide equipment, services, etc., this implies each party will pay the attendant costs and expenses associated with that equipment, service, etc., unless otherwise specified. If either party is responding to the other due to an actual (i.e., declared) emergency event, then the parties will act in good faith to take steps to provide a mechanism for reimbursement for all reasonable costs resulting from a request for services consistent with applicable contracting requirements.

IX TERM OF AGREEMENT

This memorandum of understanding will become effective upon the latter date of signature by the parties. It shall continue until cancelled or amended by either of the parties upon 60 days written notice to the other party. Amendments or modification shall be in writing and signed by both parties to this agreement.

APPROVED FOR THE U.S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE:

Keith A. Klein,
Manager

5/7/07
Date

APPROVED FOR ENERGY NORTHWEST:

W.S. Oxenford,
Vice President, Technical Services

3/29/07
Date

Memorandum of Understanding

between

AREVA NP Inc.

and

U.S. Department of Energy, Richland Operations Office

April 2011

PURPOSE

This Memorandum of Understanding (MOU) establishes a means by which the U.S. Department of Energy, Richland Operations Office (RL) can assist AREVA NP Inc. (AREVA NP) through the use of RL facilities during an emergency at the AREVA NP plant site in Richland, Washington.

BACKGROUND

AREVA NP has identified a potential need for an alternate emergency operations center (EOC) and alternate locations at which to conduct consequence assessment and employee staging during an emergency. Due to the close proximity of the AREVA NP site to the Hanford site there is the potential that Hanford facilities and workers could be impacted from an accidental release of hazardous materials at the AREVA NP site. The ability of AREVA NP to conduct effective emergency operations is key to the protection of Hanford workers and property.

STATEMENT OF OBJECTIVES

1. Develop an arrangement to provide support to AREVA NP that will also support RL's ability to protect Hanford workers and facilities;

2. Identify the scope and limitations of RL support to AREVA NP in the event of an AREVA NP emergency; and

3. Identify the activities and associated responsibilities necessary to ensure the preparedness of the Parties to provide and coordinate the requested support.

IMPLEMENTATION

If a hazardous material (toxic chemical or radiological) release occurs at AREVA NP, AREVA NP will notify the Hanford Occurrence Notification Center. This notification will include a brief description of the incident, the emergency classification level, the nature and quantity of hazardous materials released, and protective action recommendations, as available.

If AREVA NP is unable to use their facilities for emergency operations, consequence assessment, or employee staging,

AREVA NP will:

- Notify the Hanford Occurrence Center (376-2900) of the facility support they request.

- If an alternate EOC or employee staging area is requested, AREVA NP will also notify the HAMMER work control (376-5353) to advise that use of HAMMER facilities is required.

- If an alternate location for conducting consequence assessment is needed, AREVA NP will send consequence assessment personnel to the Hanford EOC to perform those functions.

RL will:

- Provide the AREVA NP personnel responding to the Hanford EOC the use of equipment to perform consequence assessment duties.

- Provide space at HAMMER, as available during normal HAMMER business hours, for an alternate AREVA NP EOC when requested. The space should provide adequate shelter for approximately 20 response personnel, and be supplied with chairs, working surfaces and electrical outlets.

- Provide an outdoor location for use as an alternate employee staging area when requested. The location should provide space to hold 600-700 AREVA NP personnel.

As preparation for the emergency support covered under this agreement,

AREVA NP will:

- Provide RL with any AREVA NP tools needed by AREVA NP consequence assessment personnel, e.g. computer software, procedure or supplies.

- Contact HAMMER work control at least two weeks in advance to request use of HAMMER facilities for AREVA NP exercises or drills.

RL will:

- Maintain consequence assessment tools, as provided by AREVA NP, in the Hanford EOC for use by AREVA NP personnel.

LIMITATIONS

The Parties understand that emergencies affecting the Hanford site or Hanford facilities would take precedence over all other uses of the RL facilities.

COST RECOVERY

AREVA NP agrees to reimburse RL on a full cost recovery basis for the use of Hanford facilities.

DISCLOSURE

Any press releases, media announcements, and advertising that pertain to this MOU, shall be provided by both Parties prior to release, except for those done under the Freedom of Information Act (5 U.S.C. 552).

EFFECTIVE DATE / TERMINATION

This agreement will become effective upon signature and will continue until it is canceled by either party in writing with at least thirty (30) days advance notice to the other party. This agreement may be amended or modified only upon written agreement signed by all parties to the agreement.

APPROVED

By: _____ (Signature)

Matthew S. McCormick, Manager
Richland Operations Office
United States Department of Energy

5/6/14
Date

By: _____ (Signature)

R. E. Link, Manager
Environmental, Health, Safety & Licensing
AREVA NP Inc.

4/19/11
Date

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MEMORANDUM OF UNDERSTANDING BETWEEN THE U.S. DEPARTMENT OF ENERGY RICHLAND OPERATIONS OFFICE AND LOURDES MEDICAL CENTER

I. PURPOSE

This memorandum of understanding (MOU) sets forth the understanding of the parties on the mutual cooperation which the parties seek to provide in instances which could result in Lourdes Medical Center (hereafter Lourdes) admission, treatment, and care of personnel who may have been injured and/or contaminated (radiologically, chemically and/or biologically) while performing work for the U.S. Department of Energy, Richland Operations Office (RL), Office of River Protection (ORP), and Pacific Northwest Site Office (PNSO) (hereafter DOE Hanford), their prime contractors, and subcontractors on the Hanford Site. This memorandum also establishes the cooperative framework by which Lourdes and DOE Hanford will work together in the planning for and response to emergencies at the Hanford Site.

II. BACKGROUND

Emergencies occurring at Hanford facilities have the potential to affect both site and community medical response capabilities. The Lourdes, DOE Hanford, and its contractors take part in the coordination and support of local emergency preparedness activities. This provides opportunity to not only coordinate response actions, but also facilitates the optimal utilization of shared resources.

III. OBJECTIVE

The objective of this MOU is to identify areas of cooperation and assistance that may be provided as a result of emergency response planning activities or during an actual emergency event.

IV. RESPONSIBILITIES

DOE HANFORD

RL shall coordinate all aspects of this agreement on behalf of RL, ORP, and PNSO. Access to specialized professional expertise contained within the Hanford workforce for distinctive issues that can confront DOE Hanford and its contractors is available to Lourdes by contacting the Patrol Operations Center on 373-3800 or the Occurrence Notification Center on 376-2900.

DOE Hanford intends to put forth its best effort in providing the following services and professional resources:

Health physics support to the emergency department staff;

Occupational medical physicians or physician assistant's support to the emergency department as requested;

Material Safety Data Sheets;

The scheduling and planning of joint emergency exercises;

The replacement of material used from any pre-stored radiation emergency kit; and

A liaison to respond to Lourdes to act as an advocate for the patient and provides an information link to the patient's employer.

LOURDES

Lourdes intends to put forth its best effort to:

Contact the Hanford Site Occupational Medical Contractor physician on-call (373-3800 and request medical support) for all Hanford personnel with suspected or confirmed occupational chemical, biologic, or radiation exposure;

Consider in its treatment and/or admission of injured, exposed and/or contaminated personnel, the application of accepted medical practice, and its responsibility to limit admissions to those numbers which can be properly handled; and

Participate in Hanford Emergency Exercises.

AREAS OF COOPERATION

The Hanford Site Occupational Medical Contractor, Lourdes, and DOE Hanford will work cooperatively to address issues including, but not limited to, interaction among the parties, areas of mutual concern, resource requirements, and quality of care.

The Hanford Site Medical Director will work in cooperation with Lourdes medical staff to develop a mutually agreeable set of protocols for diagnosis of work related injuries and illnesses, including cases involving chemical,

biologic, and/or radiation contamination injuries. These protocols will be reviewed and/or modified as necessary.

DOE Hanford and the Hanford Site Occupational Medical Contractor as requested by Lourdes will provide training in the medical management of the radiologically contaminated person.

V. DISCLOSURE

The parties will use their best efforts to assure that press releases, media announcements, and advertising by the parties, pertaining to this MOU, or the joint activities performed hereunder, have been reviewed and approved by both parties prior to release.

VI. TERM OF AGREEMENT

This MOU and its attachment(s) will become effective upon the latter date of the signature by the parties. It shall continue until canceled by either or the parties upon thirty days (30) written notice to the other party. Amendments or modifications of the MOU shall be in writing and signed by both parties to the agreement.

APPROVED FOR THE U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE

Keith Klein, Manager — **Date** 5/7/07

APPROVED FOR LOURDES MEDICAL CENTER

John Serle, President & CEO — **Date** 4-24-07

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MEMORANDUM OF UNDERSTANDING BETWEEN THE U.S. DEPARTMENT OF ENERGY RICHLAND OPERATIONS OFFICE AND KADLEC MEDICAL CENTER

I. PURPOSE

This memorandum of understanding (MOU) sets forth the understanding of the parties on the mutual cooperation which the parties seek to provide in instances which could result in Kadlec Medical Center's (KMC) admission, treatment, and care of personnel who may have been injured and/or contaminated (radiologically, chemically and/or biologically) while performing work for the U.S. Department of Energy, Richland Operations Office (RL), Office of River Protection (ORP), and Pacific Northwest Site Office (PNSO) (hereafter DOE Hanford), their prime contractors, and subcontractors on the Hanford Site. This memorandum also establishes the cooperative framework by which KMC and DOE Hanford will work together in the planning for and response to emergencies at the Hanford Site.

II. BACKGROUND

Emergencies occurring at Hanford facilities have the potential to affect both site and community medical response capabilities. The KMC, DOE Hanford, and its contractors take part in the coordination and support of local emergency preparedness activities. This provides opportunity to not only coordinate response actions, but also facilitates the optimal utilization of shared resources.

III. OBJECTIVE

The objective of this MOU is to identify areas of cooperation and assistance that may be provided as a result of emergency response planning activities or during an actual emergency event.

IV. RESPONSIBILITIES

DOE HANFORD

RL shall coordinate all aspects of this agreement on behalf of RL, ORP, and PNSO. Access to specialized professional expertise contained within the Hanford workforce for distinctive issues that can confront DOE Hanford and its contractors is available to KMC by contacting the Patrol Operations Center on 373-3800 or the Occurrence Notification Center on 376-2900.

DOE Hanford intends to put forth its best effort in providing the following services and professional resources:

Health physics support to the emergency department staff;

Occupational medical physicians or physician assistant's support to the emergency department as requested;

Material Safety Data Sheets;

The scheduling and planning of joint emergency exercises;

The replacement of material used from any pre-stored radiation emergency kit; and

A liaison to respond to KMC to act as an advocate for the patient and provides an information link to the patient's employer.

KMC

KMC intends to put forth its best effort to:

Contact the Hanford Site Occupational Medical Contractor physician on-call (373-3800 and request medical support) for all Hanford personnel with suspected or confirmed occupational chemical, biologic, or radiation exposure;

Consider in its treatment and/or admission of injured, exposed and/or contaminated personnel, the application of accepted medical practice, and its responsibility to limit admissions to those numbers which can be properly handled; and

Participate in Hanford Emergency Exercises.

AREAS OF COOPERATION

The Hanford Site Occupational Medical Contractor, KMC, and DOE Hanford will work cooperatively to address issues including, but not limited to, interaction among the parties, areas of mutual concern, resource requirements, and quality of care.

The Hanford Site Medical Director will work in cooperation with KMC medical staff to develop a mutually agreeable set of protocols for diagnosis of work related injuries and illnesses, including cases involving chemical,

biologic, and/or radiation contamination injuries. These protocols will be reviewed and/or modified as necessary.

DOE Hanford and the Hanford Site Occupational Medical Contractor as requested by KMC will provide training in the medical management of the radiologically contaminated person.

V. DISCLOSURE

The parties will use their best efforts to assure that press releases, media announcements, and advertising by the parties, pertaining to this MOU, or the joint activities performed hereunder, have been reviewed and approved by both parties prior to release.

VI. TERM OF AGREEMENT

This MOU and its attachment(s) will become effective upon the latter date of the signature by the parties. It shall continue until canceled by either or the parties upon thirty days (30) written notice to the other party. Amendments or modifications of the MOU shall be in writing and signed by both parties to the agreement.

APPROVED FOR THE U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE

Keith Klein, Manager — **Date** 5/7/07

APPROVED FOR KADLEC MEDICAL CENTER

Julie L. Meek, Vice President Finance — **Date** 04/18/07

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MEMORANDUM OF UNDERSTANDING BETWEEN THE U.S. DEPARTMENT OF ENERGY RICHLAND OPERATIONS OFFICE AND KENNEWICK GENERAL HOSPITAL

I. PURPOSE

This memorandum of understanding (MOU) sets forth the understanding of the parties on the mutual cooperation which the parties seek to provide in instances which could result in Kennewick General Hospital (hereafter KGH) admission, treatment, and care of personnel who may have been injured and/or contaminated (radiologically, chemically and/or biologically) while performing work for the U.S. Department of Energy, Richland Operations Office (RL), Office of River Protection (ORP), and Pacific Northwest Site Office (PNSO) (hereafter DOE Hanford), their prime contractors, and subcontractors on the Hanford Site. This memorandum also establishes the cooperative framework by which KGH and DOE Hanford will work together in the planning for and response to emergencies at the Hanford Site.

II. BACKGROUND

Emergencies occurring at Hanford facilities have the potential to affect both site and community medical response capabilities. The KGH, DOE Hanford, and its contractors take part in the coordination and support of local emergency preparedness activities. This provides opportunity to not only coordinate response actions, but also facilitates the optimal utilization of shared resources.

III. OBJECTIVE

The objective of this MOU is to identify areas of cooperation and assistance that may be provided as a result of emergency response planning activities or during an actual emergency event.

IV. RESPONSIBILITIES

DOE HANFORD

RL shall coordinate all aspects of this agreement on behalf of RL, ORP, and PNSO. Access to specialized professional expertise contained within the Hanford workforce for distinctive issues that can confront DOE Hanford and its contractors is available to KGH by contacting the Patrol Operations Center on 373-3800 or the Occurrence Notification Center on 376-2900.

DOE Hanford intends to put forth its best effort in providing the following services and professional resources:

Health physics support to the emergency department staff;

Occupational medical physicians or physician assistant's support to the emergency department as requested;

Material Safety Data Sheets;

The scheduling and planning of joint emergency exercises;

The replacement of material used from any pre-stored radiation emergency kit; and

A liaison to respond to KGH to act as an advocate for the patient and provides an information link to the patient's employer.

KGH

KGH intends to put forth its best effort to:

Contact the Hanford Site Occupational Medical Contractor physician on-call (373-3800 and request medical support) for all Hanford personnel with suspected or confirmed occupational chemical, biologic, or radiation exposure;

Consider in its treatment and/or admission of injured, exposed and/or contaminated personnel, the application of accepted medical practice, and its responsibility to limit admissions to those numbers which can be properly handled; and

Participate in Hanford Emergency Exercises.

AREAS OF COOPERATION

The Hanford Site Occupational Medical Contractor, KGH, and DOE Hanford will work cooperatively to address issues including, but not limited to, interaction among the parties, areas of mutual concern, resource requirements, and quality of care.

The Hanford Site Medical Director will work in cooperation with KGH medical staff to develop a mutually agreeable set of protocols for diagnosis of work related injuries and illnesses, including cases involving chemical,

biologic, and/or radiation contamination injuries. These protocols will be reviewed and/or modified as necessary.

DOE Hanford and the Hanford Site Occupational Medical Contractor as requested by KGH will provide training in the medical management of the radiologically contaminated person.

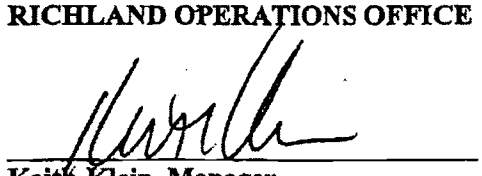
V. DISCLOSURE

The parties will use their best efforts to assure that press releases, media announcements, and advertising by the parties, pertaining to this MOU, or the joint activities performed hereunder, have been reviewed and approved by both parties prior to release.

VI. TERM OF AGREEMENT

This MOU and its attachment(s) will become effective upon the latter date of the signature by the parties. It shall continue until canceled by either or the parties upon thirty days (30) written notice to the other party. Amendments or modifications of the MOU shall be in writing and signed by both parties to the agreement.

APPROVED FOR THE U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE



Keith Klein, Manager

5/7/07
Date

APPROVED FOR KENNEWICK GENERAL HOSPITAL

Glen Marshall, CEO

3/1/07
Date

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Tri-County Mutual Aid Agreement

This Agreement, made and entered into on this 5th day of February, 1998 by and between the Cities of Richland, Kennewick, Pasco, Prosser, and College Place; Benton County Emergency Services; Franklin County Emergency Management; and the Fire Protection Districts of Benton County #1, Benton County #2, Benton County #3, Benton County #4, Benton County #5, Benton County #6, Franklin County #3, Walla Walla County #4, Walla Walla County #5 and the United States Department of Energy, Richland Operations Office, which maintains an organized and equipped fire department, hereinafter referred to as the "Hanford Fire Department" and collectively referred to hereafter as "The Parties."

The Parties, pursuant to authority granted by RCW 39.34.030, RCW Title 52, and Public Law 46 (Title 42 USC, Section 1856), do hereby agree to respond in accordance with the terms and conditions as set forth below;

Witnesseth:
Whereas, each of The Parties, who are signatories, hereto maintains equipment and personnel for the suppression of fires within its own jurisdiction and areas, and

Whereas, The Parties desire the ability to augment the fire and emergency medical protection available in their various establishments, districts, agencies, and municipalities in the event of large fires or conflagrations or other disasters, and

Whereas, the lands or districts of The Parties are situated in such a manner so that mutual assistance in a fire or medical emergency is operationally feasible, and

Whereas, it is the policy of The Parties and of their governing bodies to conclude such agreements wherever practicable, and

Whereas, it is mutually deemed sound, desirable, practicable, and beneficial for The Parties to render assistance to one another in accordance with these terms:

Therefore Be It Agreed That:

1. Whenever it is considered necessary by the commanding officer of a fire agency belonging to a party to this agreement, or by the commanding officer of any such fire agency actually present at any fire or other emergency, including medical emergency, to request assistance under the terms of this agreement, is authorized to do so, and the commanding officer of the department receiving the request, or any authorized representatives of such commanding officer, shall expeditiously take the following actions:

Tri-County Mutual Aid Agreement *February 5, 1998*

A. Immediately determine if apparatus and personnel can be spared in response to the call and advise the requesting commander if such assistance is not available.

B. Determine what apparatus and personnel might be most effectively dispatched,

C. Determine the mission to be assigned in accordance with the detailed plans and procedures of operation drawn in accordance with this agreement by the technical heads of the fire agencies concerned.

D. Promptly dispatch apparatus and personnel with instructions as to their mission.

2. A. Rendering assistance under the terms of this agreement shall not be mandatory.

B. The Parties recognize that additional special risks exist at the Hanford Site. During incidents involving radiological, mixed hazardous waste, and special conditions, assistance to the Hanford Fire Department will be provided as requested.

3. A. Each party to this agreement waives all claims against the other party or parties for compensation for any loss, damage, personal injury or death occurring in consequence of the performance of this agreement.

B. Parties to this agreement can seek reimbursement for services under contractual or service agreements.

C. No party to this Agreement shall be required to pay compensation to any other party for services rendered. The mutual advantages and protection afforded by this Agreement shall be adequate consideration.

D. Each party shall indemnify and hold harmless each of the other parties, their officers, agents, contractors, servants and employees from any and all liability for such losses, expenses, damages, personal injury or death arising out of fire protection assistance rendered pursuant to this agreement. All such claims and related rights are hereby expressly waived with the exception of claims for injuries and property damage resulting from nuclear incidents as defined at 42 USC Section 2014(q) which may be subject to indemnification under the provisions of the Price-Anderson Act, 42 USC Section 2210.

E. Parties to this agreement will not hold any joint properties.

Tri-County Mutual Aid Agreement *February 5, 1998*

4. The commanding officer requesting assistance shall assume full charge of the incident. Command of an incident may only be assumed under a written delegation of authority. However, the involved agency maintains overall responsibility of the incident. If the officer specifically requests that a senior officer of a fire agency furnishing assistance assist with command, the requesting officer shall not, by requesting assistance be relieved of his responsibility for the operation. The apparatus, personnel and equipment of the agency rendering assistance shall be under the immediate supervision of and shall be the immediate responsibility of the senior responding officer or the commanding officer of the department rendering assistance.

5. Inherent in this plan is the need and requirement for training of all participating district/departments. Individual, company, and agency training is required as a prerequisite and must be on-going and upgraded to ensure the qualification of personnel and the quality of the responses in performance, integration, and safety.

6. The chief fire officer and personnel of the fire agencies of The Parties are invited and encouraged on a reciprocal basis, to frequently visit each other's activities for guided familiarization tours consistent with local security requirements and as feasible, to jointly conduct pre-fire planning inspections, drills, and interdepartmental multi-agency training exercises may be conducted to maintain proficiency on an agreed-upon schedule.

7. The commanding officers of the cooperating fire agencies shall constitute the administrations board and are authorized to meet and draft any detailed plans and operational procedures necessary to effectively implement this agreement. Such plans and procedures of operation shall become effective upon ratification by the signatory parties.

8. It is agreed to by the participating parties that future participation by additional entities shall be subject to approval by the Tri-County Fire Chiefs' Association. The governing bodies of the participating entities hereby delegate this approval authority to their respective representatives.

9. This agreement shall become effective upon the date entered and remain in full force and effect until canceled by mutual agreement of the parties'. Individuals/single parties will provide written notice of withdrawal by any party to the other parties giving a minimum of ten (10) days' notice of said cancellation.

Tri-County Mutual Aid Agreement ***February 5, 1998***

In Witness Whereof, the parties hereto have executed this agreement the day and year first above written.

11/4/97
City of Richland Date

11/4/97
City of Kennewick Date

11-3-97
City of Pasco Date

10-28-97
City of Prosser Date

10/27/97
City of College Place Date

Benton County Fire District #1 Date

11/3/97
Benton County Fire District #2 Date

10-28-97
Benton County Fire District #3 Date

10-21-97
Benton County Fire District #4 Date

11-5-97
Benton County Fire District #5 Date

10-31-97
Benton County Fire District #6 Date

11/10/97
Franklin County Fire District #3 Date

10/22/97
Walla Walla County Fire District #4 Date

Walla Walla County Fire District #5 Date

10-17-97
Benton County Emergency Services Date

11-06-97
Franklin County Emergency Mgmt. Date

11/21/97
John D. Wagoner, Manager Date
U.S. Department of Energy
Richland Operations Office

MEMORANDUM OF UNDERSTANDING
FOR MUTUAL LAW ENFORCEMENT ASSISTANCE
(March 13, 2009)

This Memorandum of Understanding (MOU) is entered into between the U.S. Department of Energy (DOE), Richland Operations Office (RL), Security and Emergency Services Division (SES), and the following law enforcement agencies:

- Adams County Sheriff's Office, Adams County, Washington
- Benton County Sheriff's Office, Benton County, Washington
- Franklin County Sheriff's Office, Franklin County, Washington
- Grant County Sheriff's Office, Grant County, Washington
- Yakima County Sheriff's Office, Yakima County, Washington
- Kennewick Police Department, Kennewick, Washington
- Pasco Police Department, Pasco, Washington
- Richland Police Department, Richland, Washington
- West Richland Police Department, West Richland, Washington
- Tri-City Detachment, Washington State Patrol, Kennewick, Washington

RECITALS

1. The above listed departments are the principal law enforcement agencies of their respective municipalities and/or counties. The Hanford Site is located in Benton County and adjacent to Adams, Franklin, Yakima, and Grant Counties.

2. This agreement is entered into by DOE pursuant to the Economy Act, 31 U.S.C. § 1535, the Atomic Energy Act of 1954, 42 U.S.C. § 7256, as amended, and DOE Manual 470.4-3, and by the above listed law enforcement agencies pursuant to RCW 10.93.130, which provides that any law enforcement agency may contract with any other such agency to provide mutual law enforcement assistance in order that the parties may perform their responsibilities described above. This MOU will be reviewed annually.

3. The sheriffs and police chiefs of the above listed agencies and the SES Director shall jointly administer this agreement.

4. There shall be no funds or property held under this agreement.

ARTICLE I – Scope

The general scope of this agreement includes mutual law enforcement assistance, loan of special equipment, and other assistance (i.e. canine support), which may be identified by the parties from time to time. Specifically, the parties agree as follows:

A. The sheriffs and police chiefs of the above listed agencies, at their discretion and to the extent allowed by law, agree to commit available manpower and other resources to assist RL security or law enforcement in emergencies on the Hanford Site. DOE will provide training and special equipment and materials to facilitate response by the above listed enforcement agencies.

B. RL, at its discretion and to the extent allowed by law, will provide assistance to the above listed law enforcement agencies in the execution of their law enforcement responsibilities. Assistance may include temporary use of certain property and equipment, including where appropriate and necessary, operators of such equipment; and use of facilities (to include, but not be limited to, the Emergency Vehicle Operations Course). RL may require individual employees of the law enforcement agencies to sign general release and indemnification agreements as a condition of granting approval for use of, or training with, DOE property or facilities (to include but not be limited to EVOC).

ARTICLE II – Request for Assistance

A. Requests for assistance from RL shall generally be made by the sheriffs and police chiefs or their official designees and shall be addressed to the SES Director. Each request shall be subject to approval on an individual basis. Upon approval, the requested assistance will be provided, subject to the provisions of this agreement and any additional conditions to which the parties agree.

   - Exception: Requests by the law enforcement agencies for assistance from RL requiring an immediate or emergency response shall be made through the on-duty Hanford Patrol Shift Commander.

B. Requests for assistance from the law enforcement agencies shall generally be made by the SES Director, and shall be addressed to affected sheriffs and police chiefs. Each request shall be subject to approval on an individual basis. Assistance provided by the aforementioned law enforcement agencies shall be subject to the provisions of this agreement and any additional conditions to which the parties agree.

   - Exception: In the event of a Hanford Site security emergency, the on-duty Hanford Patrol Shift Commander shall request assistance from the aforementioned law enforcement agencies via the South East Communications Center (SECOM).
   - These requests will be in accordance with specific RL response plans and will comply to the extent possible, with the polices and/or guidelines of the enforcement agencies and may include:

     - Support on the Hanford Site with personnel and/or equipment;
     - Support for fresh pursuit either on or beyond the Hanford Site for the purposes of preventing the escape or effecting the detainment of any person who commits a misdemeanor or felony or is suspected of having committed a misdemeanor or felony on the Hanford Site. Such support may include:

       (a) Establishing road blocks at requested locations at the outer perimeter of the Hanford Site if possible and safe;
       (b) Deployment of spike strips;
       (c) Secondary pursuit support to Hanford Patrol units; and
       (d) Other assistance as determined at the time of need.

C. If the assistance provided by any of the parties includes providing personnel, such personnel may operate under the general direction of, but shall not be deemed to be an employee of, the

receiving parties.

D. RL may at its option provide any assistance requested through one or more of its Hanford on-site operating contractors.

ARTICLE III – Termination

This agreement shall commence on the date(s) indicated in ARTICLE V, and is intended to be of indefinite duration. This agreement or any activity there under may be terminated upon 30 days written notice by either party to the other party. Notwithstanding the above, the parties agree to exercise their best efforts to avoid terminating any individual activity in order to support the ability of each party to fulfill its mission This agreement may be amended in writing at any time by agreement of the undersigned parties.

ARTICLE IV – Compensation
Except as otherwise agreed in individual cases, no compensation shall be paid by the DOE or by the law enforcement agencies for assistance rendered pursuant to this agreement.

ARTICLE V – Effect of this MOU

This MOU is neither a fiscal nor a funds obligation document.

This agreement is strictly for internal management purposes for each of the parties. It is not legally enforceable and shall not be construed to create any legal obligation on the part of any of the parties. This agreement shall not be construed to provide a private right or cause of action for or by any person or entity.

All agreements herein are subject to, and will be carried out in compliance with, all Federal applicable laws, regulations and other legal requirements.

ARTICLE VI – Disclaimer of Warrantees

Neither the DOE nor the aforementioned law enforcement agencies make any representations or warranty as to the physical condition or usefulness of any equipment, information, or other assistance exchanged under this agreement or the fitness for any particular purpose to which any such equipment, information, or other assistance may be put by the recipient.

ARTICLE VII – Loss or Damage to Property or Equipment

Property and equipment, which may be loaned by one party to the other under this agreement, shall be returned in as good condition as when it was received by the using party, reasonable wear and tear accepted. The using party agrees to reimburse the lending party for any loss or damage of any nature to the property or equipment that is caused by or arises from activities of the user.

ARTICLE VIII – Agreement

The sheriffs and police chiefs of the aforementioned law enforcement agencies shall not assign this agreement or any interest therein or any claim there under, except as expressly authorized in writing by DOE.

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the dates indicated below (a separate signature/approval page is provided for each agency).

APPROVED:

Adams County Sheriff

By: Doug Barger, Sheriff

Date: 04-07-09

Richland Operations Office
Security and Emergency Services Division

By: Gary S. Loiacono, Director

Date: 3/30/09

RECEIVED
APR 10 2009
DOE-RLCC

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the dates indicated below (a separate signature/approval page is provided for each agency).

APPROVED:

Benton County Sheriff

By: Larry Taylor, Sheriff — Date: 4-3-09

Richland Operations Office
Office of Security and Emergency Services

By: Gary S. Loiacono, Director — Date: 3/30/09

RECEIVED
APR 07 2009
DOE-RLCC

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the dates indicated below (a separate signature/approval page is provided for each agency).

APPROVED:

Franklin County Sheriff

Richard Lathim

By: Richard Lathim, Sheriff

4/7/09

Date:

Richland Operations Office
Security and Emergency Services Division

G. S. Loiacono

By: Gary S. Loiacono, Director

3/30/09

Date:

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APR - 9 2009
DOE-RLCC

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the dates indicated below (a separate signature/approval page is provided for each agency).

APPROVED:

Grant County Sheriff Office

Frank DeTrolio
By: Sheriff Frank T. DeTrolio

4-6-09
Date:

Richland Operations Office
Security and Emergency Services Division

G. S. Loiacono
By: Gary S. Loiacono, Director

3/30/09
Date:

RECEIVED
APR - 8 2009
DOE-RLCC

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the dates indicated below (a separate signature/approval page is provided for each agency).

APPROVED:

Yakima County Sheriff

By: Ken Irwin, Sheriff

Date: 4-7-09

Richland Operations Office
Security and Emergency Services Division

By: Gary S. Loiacono, Director

Date: 3/30/09

RECEIVED
APR 10 2009
DOE-RLCC

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the dates indicated below (a separate signature/approval page is provided for each agency).

APPROVED:

Kennewick Police Department

By: Ken Hohenberg, Chief — Date: 04/27/09

Richland Operations Office
Security and Emergency Services Division

By: Gary S. Loiacono, Director — Date: 3/20/09

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the dates indicated below (a separate signature/approval page is provided for each agency).

APPROVED:

Pasco Police Department

Denis Austin — 4-3-09

By: Denis Austin, Chief — Date:

Richland Operations Office
Security and Emergency Services Division

G. L. Loiacono — 3/30/09

By: Gary S. Loiacono, Director — Date:

RECEIVED
APR 07 2009
DOE-RLCC

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the dates indicated below (a separate signature/approval page is provided for each agency).

APPROVED:

Richland Police Department

By: Tony Corsi, Chief

Date: 04 02 09

Richland Operations Office
Security and Emergency Services Division

By: Gary S. Loiacono, Director

Date: 3/30/09

RECEIVED
APR 07 2009
DOE-RLCC

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the dates indicated below (a separate signature/approval page is provided for each agency).

APPROVED:

West Richland Police Department

By: ~~Mark Panther~~, Chief
Layne Erdman

Date: 4-2-09

Richland Operations Office
Security and Emergency Services Division

By: Gary S. Loiacono, Director

Date: 3/30/09

RECEIVED
APR - 8 2009
DOE-RLCC

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the dates indicated below (a separate signature/approval page is provided for each agency).

APPROVED:

Washington State Patrol

By: John R. Batiste, Chief — Date: 4.29.09

Richland Operations Office
Security and Emergency Services Division

By: Gary S. Loiacono, Director — Date: 3/30/09

APPROVED AS TO FORM

ASSISTANT ATTORNEY GENERAL

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MEMORANDUM OF UNDERSTANDING FOR MUTUAL LAW ENFORCEMENT ASSISTANCE (July 2, 2009)

This Memorandum of Understanding (MOU) is entered into between the U.S. Department of Energy (DOE), Richland Operations Office (RL), Security and Emergency Services Division (SES), and the U.S. Fish and Wildlife Service (FWS), Region 1, Office of Refuge Law Enforcement (ORLE) and Mid-Columbia River National Wildlife Refuge Complex (NWRC), for mutual law enforcement assistance on the Hanford Site and the Hanford Reach National Monument.

RECITALS

1. The RL protective forces (Hanford Patrol) exercise law enforcement authority and maintain security on the Hanford Site as federal officers authorized to carry firearms and make arrests pursuant to Section 161(k) of the Atomic Energy Act of 1954, as amended (42 U.S.C. § 2201(k)».

2. This agreement is entered into by both agencies pursuant to the Economy Act, 31 U.S.C. § 1535, by the DOE pursuant to the authority of the Atomic Energy Act of 1954, 42 U.S.C. § 7256, as amended, and DOE Manual 470.4.3, and by the FWS pursuant to the authority of the Fish & Wildlife Act of 1956, 16 U.S.C. § 742 and the Fish & Wildlife Coordination Act, 16 U.S.C. §§ 661 through 667, and will be reviewed annually.

3. The Region 1, Chief ORLE, the Project Leader, Mid-Columbia River NWRC, and the SES Director shall jointly administer this agreement.

4. There shall be no funds or property held or transferred under this agreement.

ARTICLE I - Scope

The general scope of this agreement includes mutual law enforcement assistance, loan of special equipment, and other assistance, which may be identified by the parties from time to time. Specifically, the parties agree as follows:

A. The FWS Region 1 ORLE and Mid-Columbia River NWRC at their discretion and to the extent allowed by law, agree to commit available manpower and other resources to assist RL with security or law enforcement emergencies on the Hanford Site. DOE will provide training and special equipment and materials to facilitate response by FWS officers.

B. RL, at its discretion and to the extent allowed by law, will provide assistance to the FWS in the execution of its law enforcement responsibilities. Assistance may include law enforcement backup assistance on the Hanford Reach National Monument; temporary use of certain property and equipment, including where appropriate and necessary, operators of such equipment; and utilization of facilities (to include, but not be limited to, the Emergency Vehicle Operations Course (EVOC), Firearms Training Facilities, and

secondary Dispatch Services);. RL may, as appropriate, require individual employees of FWS to sign general release and indemnification agreements as a condition of granting approval for use of, or training with, DOE property or facilities (to include but not be limited to EVOC).

ARTICLE II - Request for Assistance

A. Requests for assistance from RL shall generally be made by the Region 1 Chief ORLE, Project Leader Mid-Columbia River NWRC or their official designees and shall be addressed to the SES Director. Each request shall be subject to approval on an individual basis. Upon approval, the requested assistance will be provided, subject to the provisions of this agreement and any additional conditions to which the parties agree.

   ~ Exception: Requests by the FWS for assistance from RL requiring an immediate or emergency response shall be made through the on-duty Hanford Patrol Shift Commander.

B. Requests for assistance from the FWS shall generally be made by the SES Director, and shall be addressed to the Region 1 Chief ORLE or Project Leader Mid-Columbia River NWRC. Each request shall be subject to approval on an individual basis. Assistance provided by the aforementioned law enforcement agencies shall be subject to the provisions of this agreement and any additional conditions to which the parties agree.

   ~ Exception: In the event of a Hanford Site security emergency, the on-duty Hanford Patrol Shift Commander shall request assistance from the FWS North Columbia Basin Zone Officer, or nearest available FWS Officer via the South East Communications Center (SECOM) or Washington State Patrol Dispatch. These requests will be in accordance with specific RL response plans and will comply, to the extent possible, with the policies and/or guidelines of the FWS and may include:

      - Support on the Hanford Site with personnel and/or equipment;
      - Support for fresh pursuit either on or beyond the Hanford Site for the purposes of preventing the escape or effecting the detainment of any person who commits a misdemeanor or felony or is suspected of having committed a misdemeanor or felony on the Hanford Site. Such assistance may include:

        (a) Establishing road blocks at requested locations at the outer perimeter of the Hanford Site if possible and safe;
        (b) Deployment of spike strips;
        (c) Secondary pursuit supports to Hanford Patrol units; and
        (d) other assistance as determined at the time of need.

C. If the assistance provided by any of the parties includes providing personnel, such personnel may operate under the general direction of, but shall not be deemed to be an employee of, the receiving parties.

D. RL may, at its option, provide any assistance requested pursuant to this MOU through one or more of its Hanford on-site operating contractors.

ARTICLE III - Termination

This agreement shall commence on the date(s) indicated in ARTICLE V, and is intended to be of indefinite duration. This agreement or any activity there under may be terminated upon 30 days' written notice by either party to the other party. Notwithstanding the above, the parties agree to exercise their best efforts to avoid terminating any individual activity in order to support the ability of each party to fulfill its mission. This agreement may be amended in writing at any time by mutual agreement of the undersigned parties.

ARTICLE IV - Compensation

Except as otherwise agreed in individual cases, no compensation shall be paid by the DOE or by the FWS for assistance rendered pursuant to this agreement.

ARTICLE V - Effect of this MOU

1. This MOU is neither a fiscal nor a funds obligation document.

2. This Agreement is strictly for internal management purposes for each of the Parties. It is not legally enforceable and shall not be construed to create any legal obligation on the part of any of the Parties. This Agreement shall not be construed to provide a private right or cause of action for or by any person or entity.

3. All agreements herein are subject to, and will be carried out in compliance with, all Federal applicable laws, regulations, policies and other legal requirements.

ARTICLE VI – Agreement

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the dates indicated below (a separate signature/approval page is provided for each agency).

APPROVED:

Region 1, Office of Refuge Law Enforcement

By: Jon Storey, Chief — Date 7/15/09

Project Leader, Mid-Columbia River NWRC

By: Greg Hughes, Project Leader — Date 7/16/09

DOE Richland Operations Office
Security and Emergency Services Division

By: Gary S. Loiacono, Acting Director — Date 7/28/09

MEMORANDUM OF UNDERSTANDING FOR LAW ENFORCEMENT ASSISTANCE

This Memorandum of Understanding (MOU) is between the U.S. Department of Energy (DOE), Richland Operations Office (RL), Security and Emergency Services Division (SES), and the Washington Department of Fish and Wildlife (WDFW) Enforcement Program.

RECITALS

1. The RL protective forces (Hanford Patrol) exercise law enforcement authority and maintain security on the Hanford Site as federal officers authorized to carry firearms and make arrests pursuant to Section 161(k) of the Atomic Energy Act of 1954 (42 U.S.C. § 2201(k)), as amended.
2. WDFW Fish and Wildlife Officers (FWOs) are general authority law enforcement officers for Washington State, who routinely enforce all State laws pursuant to RCW 10.93 and 77.15.075.
3. This agreement is pursuant to the authority of the Atomic Energy Act of 1954, as amended, and RCW 10.93.130, which provides for mutual law enforcement assistance in Washington.
4. The Chief of the WDFW Enforcement Program and the SES Director shall jointly administer this agreement.
5. There shall be no funds transferred or held under this agreement.

ARTICLE I – Scope

The general scope of this agreement includes mutual law enforcement assistance, loan of equipment, and other assistance, which may be identified by the parties from time to time. Specifically, the parties agree as follows:

A. The Chief of the WDFW Enforcement Program, at his or her discretion and to the extent allowed by law, agrees to commit available manpower and other resources to assist RL in dealing with security or law enforcement emergencies on the Hanford Site. DOE will provide training and special equipment and materials to facilitate the response by WDFW.

   Additionally, while conducting routine boat patrols on the Hanford Reach of the Columbia River, FWOs will enforce trespass and other laws on the federal lands adjacent to the river, particularly in the area from the Vernita Bridge to the Bonneville Power Administration powerlines.

B. WDFW may loan road-worthy, used vehicles to the HAMMER Training Facility for use on the Emergency Vehicle Operations Course (EVOC). With prior coordination with HAMMER scheduling personnel, WDFW staff may use these vehicles on the HAMMER EVOC

C. RL will assist WDFW in its law enforcement responsibilities. Assistance may include temporary use of certain property and equipment (which may include individuals to operate such equipment), utilization of facilities (including, but not limited to EVOC and firearms ranges), and other forms of assistance. RL may require individual WDFW staff to sign

general release and indemnification agreements, as a condition of granting approval for use of, or training with or in, U.S. government property or facilities.

ARTICLE II – Routine Requests for Assistance

A. The WDFW Chief of Enforcement or designee shall submit routine requests for assistance from RL to the SES Director. Each request shall be subject to approval on an individual basis. RL may, at its option, provide requested assistance through one or more of its Hanford on-site operating contractors. Assistance provided by RL shall be subject to the provisions of this agreement and any additional conditions to which the parties agree.

B. The SES Director or designee shall submit routine requests for assistance from WDFW to the Chief of Enforcement. Each request shall be subject to approval on an individual basis. Assistance provided by WDFW shall be subject to the provisions of this agreement and any additional conditions to which the parties agree.

ARTICLE III – Emergency Requests for Assistance

A. During a Hanford Site security emergency, the on-duty Hanford Patrol Shift Commander may request assistance from WDFW by contacting Washington State Patrol Communications in Kennewick or FWOs directly via radio or cell phone. WDFW may provide support on the Hanford Site with personnel and/or equipment, secondary pursuit support to Hanford Patrol units, and other law enforcement assistance as determined at the time of need.

B. In an emergency on or adjacent to the Hanford Site, WDFW FWOs may request assistance from the on-duty Hanford Patrol Shift Commander by radio or cell phone. Hanford Patrol may provide emergency support to FWOs on the Hanford Site and other law enforcement assistance as determined at the time of need.

C. The law enforcement officers providing emergency assistance may operate under the general direction of, but shall not be deemed to be an employee of, the receiving parties.

ARTICLE IV– Duration and Termination

This agreement shall commence on the date indicated in ARTICLE IX for an indefinite duration. This agreement or any activity thereunder may be terminated upon 30 days written notice by either party to the other party. The parties agree to attempt to avoid terminating any individual activity in order to support the ability of each party to fulfill its mission. This agreement may be amended in writing at any time by agreement of the parties.

ARTICLE V – Waiver of Claims

A. Except as otherwise provided in ARTICLE VIII, the United States of America, by and through DOE, for the sole consideration of any benefits derived from this agreement, hereby waives, relinquishes, remises, releases and forever discharges the Washington Department of Fish and Wildlife from any and all claims, actions, causes of actions, demands, rights, damages, costs, loss of service, expenses, and compensation whatsoever, which the

undersigned now has/have or which may hereafter accrue on account of or in any way growing out of any and all known and unknown, foreseen and unforeseen bodily and personal injuries and property damage and the consequences thereof, resulting or to result in consequence of assistance rendered or activity conducted by WDFW under this agreement or resulting or to result in consequences of use of WDFW property.

B. Except as otherwise provided in ARTICLE VIII, Washington State, by and through WDFW, for the sole consideration of any benefits derived from this agreement, hereby waives, relinquishes, remises, release and forever discharges DOE, its officers, contractors, and employees from any and all claims, actions, cause of actions, demands, rights, damages, costs, loss of service, expenses, and compensation whatsoever, which the undersigned now has/have or which may hereafter accrue on account of or in any way growing out of any and all known and unknown, foreseen and unforeseen bodily and personal injuries and property damage and the consequences thereof, resulting or to result in consequence of assistance rendered or activity conducted by the aforementioned law enforcement agencies under this agreement, or resulting or to result in consequences of use of DOE property or facilities.

ARTICLE VI – Payment

Except as otherwise agreed by the parties in individual cases, no compensation shall be paid by the DOE or the WDFW for law enforcement assistance rendered pursuant to this agreement.

ARTICLE VII – Disclaimer of Warrantees

Either the DOE nor WDFW make any representations or warranty as to the physical condition or usefulness of any equipment, information, or other assistance exchanged under this agreement or the fitness for any particular purpose to which any such equipment, information, or other assistance may be put by the recipient.

ARTICLE VIII – Loss or Damage to Property or Equipment

The parties may loan property or equipment to one another. The property or equipment should be returned to the lender in the same general condition as it was when borrowed. Should the borrowed property or equipment be lost or damaged, the borrowing party shall repair, replace or pay the cost of replacing the item to the lending party. The parties may, however, agree to an alternative arrangement, such as rendering services in exchange for the lost or damaged equipment or providing alternative property or equipment.

ARTICLE IX – Agreement

A. This MOU is neither a fiscal nor a funds obligation document.

B. This Agreement is strictly for internal management purposes for each of the Parties. It is not legally enforceable and shall not be construed to create any legal obligation on the part of any of the Parties. This Agreement shall not be construed to provide a private right or cause of action for or by any person or entity.

C. All agreements herein are subject to, and will be carried out in compliance with, all Federal applicable laws, regulations and other legal requirements.

D. WDFW shall not assign this agreement or any interest therein or any claim thereunder, except as expressly authorized in writing by DOE.

IN WITNESS WHEREOF, the parties have executed this agreement as of the dates indicated below.

APPROVALS:

For the **Washington Department of Fish and Wildlife**

By: Bruce Bjork, WDFW Chief of Enforcement — Date: 4-16-09

By: William Brooks, *C.P.M.*, WDFW Contracts Officer — Date: APR 15 2009

For **Richland Operations Office**
Security and Emergency Services Division

By: Gary L. Lolacono, Acting Director — Date: 4/28/09

PERMIT ATTACHMENT 5
HANFORD FACILITY PERSONNEL TRAINING PROGRAM

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PERMIT ATTACHMENT 5
HANFORD FACILITY PERSONNEL TRAINING PROGRAM

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5 HANFORD FACILITY PERSONNEL TRAINING PROGRAM

This Attachment provides a description of the Hanford Facility Personnel Training program. This program description includes the elements necessary to demonstrate compliance with WAC 173-303-330. The Training Program described in this Attachment is applicable to Hanford Facility personnel[1]. The Hanford Facility Personnel Training program consists of general facility training and unit group-specific training, and includes classroom instruction or on the job training (OJT). Classroom instruction and OJT is identified in the unit specific training plans in Parts III, and V. Unit group-specific training is specific to particular dangerous waste management unit groups or operationally related dangerous waste management unit groups in the Permit.

5.1 Introductory and Continuing Training

Introductory and continuing training are designed to prepare Hanford Facility personnel to manage and maintain the unit groups in Permit Parts III, and V in a safe, effective, and environmentally sound manner and to perform waste management duties related to their job descriptions located in the unit specific training plans. In addition to preparing personnel to manage and maintain these dangerous waste management unit groups under normal conditions, the training ensures that personnel are prepared to respond in a prompt and effective manner should abnormal or emergency conditions occur. Emergency response training is based upon WAC 173-303-330(1)(e) and is consistent with the description of actions contained in unit specific contingency plans. The introductory and continuing training will provide the following:

- Teach Hanford Facility personnel to perform their duties in a way that ensures the Hanford Facility's compliance with WAC 173-303.
- Teach Hanford Facility personnel dangerous waste management procedures, including implementation of the Contingency Plan, relevant to the job titles/positions in which they are employed.
- Ensure Hanford Facility personnel can respond effectively to emergencies.

5.1.1 Introductory Training

Introductory Training consists of the following: General Hanford Facility Orientation, Contingency Plan Training, Emergency Coordinator Training, and Operations Training.

Introductory training includes general facility training and any unit specific training applicable to Hanford Facility personnel job descriptions and work assignments. Hanford Facility personnel cannot perform a waste management duty, for which they are not properly trained, except to gain required experience while under the direct supervision of a person knowledgeable in dangerous waste management procedures, and must include training relevant to the positions in which the facility personnel are employed. Upon successful completion of introductory training, Hanford Facility personnel may work unescorted/unsupervised.

Hanford Facility personnel must be trained within six months after their employment at or assignment to the Hanford Facility, or to a new job title/position at the Hanford Facility, whichever is later. Retraining of introductory training may not be necessary when Hanford Facility personnel are reassigned. Prior to completion of required training, new Hanford Facility personnel must work under the direct supervision of trained personnel until the training is completed. [WAC 173-303-330(1)(c)].

5.1.1.1 General Hanford Facility Orientation

General Hanford Facility Orientation provides an orientation to dangerous waste management activities being conducted on the Hanford Facility. General facility orientation provides:

[1] Based on WAC 173-303-040 'personnel' or 'facility personnel' means all persons who work at, or oversee the operations of, a dangerous waste facility, and whose actions or failure to act may result in noncompliance with the requirements of WAC 173-303-280 through 173-303-395 and 173-303-600 through 173-303-695.

- Description of emergency signals and appropriate response.
- Identification of contact(s) for emergencies involving dangerous waste and dangerous waste management activities.
- Training records for General Hanford Facility Orientation are only maintained for Hanford Facility personnel as defined in this Attachment.

5.1.1.2 Contingency Plan Training

This training includes actions required to meet applicable training requirements of WAC 173-303-330(1)(e), to respond effectively to emergencies at each unit group in Parts III, V, and VI that may be applicable to the job title/position of a particular individual.

5.1.1.3 Emergency Coordinator Training

Hanford Facility personnel whose job title/position require performing emergency coordinator duties, defined in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Section 4.2 [e.g., Building Emergency Director] in the Hanford Incident Command System, receive training on implementation of the contingency plan and training assigned in applicable unit group-specific Permit conditions in Permit Parts III, V, and VI. In accordance with WAC 173-303-360(1), Emergency coordinators must also be thoroughly familiar with operations, activities, location and properties of all waste handled, location of all records, and the unit/building layout for each unit group to which they are assigned.

5.1.1.4 Operations Training

Dangerous waste management operations training (e.g., waste designation training, shippers training) is specified for particular job title/positions in the unit group specific requirements in the Permit Parts III, V, and VI. Operations training provides training to Hanford Facility personnel on the operation of dangerous waste management units (e.g., container management unit) and the type of activities performed at the waste management unit (e.g., sampling).

5.1.2 Continuing Training

Continuing training, required by WAC 173-303-330(1)(b), includes review of general facility training and unit specific training, as specified below:

- General Hanford Facility training: Annual refresher training is provided for General Hanford Facility Training (Section 5.1.1.1).
- Contingency Plan Training: Annual refresher training is provided for Contingency Plan Training (Section 5.1.1.2.).
- Emergency Coordinator Training: Annual refresher training is provided for Emergency Coordinator Training (Section 5.1.1.3).
- Operations Training: Refresher training occurs annually, every other year, or every three years for operations training. One-time only training does not contain refresher courses, and will be identified as a one-time only training course. The TSD unit group specific training plan will specify the frequency for each operations training course.

Continuing training is administered annually, and includes training with two-year or three-year retraining frequencies. A course is administered annually if it is administered not less than 30 days after the retraining date set for that course.

5.2 Elements of Unit Specific Training

Unit group specific training requirements not addressed in Permit Condition II.C, and Attachment 5 for Hanford Facility personnel assigned to dangerous waste management units are included in Permit Parts III, and V. Each unit group specific Chapter will contain an Addendum consisting of a Training matrix, and applicable requirements of WAC 173-303-330(1)(e). Each training matrix contains the following:

- Training categories (from Permit Attachment 5, Sections 5.1.1 and 5.1.2).
- Job title/position (e.g., staff, dangerous waste worker categories, building emergency director).
- Breakdown of operations training (e.g., container management, tank system management).

Changes to the unit specific-group training matrix are subject to the modification in accordance with Permit Condition I.C.3.

5.3 Training Records

Personnel training records are maintained in hard copy form or by using electronic data storage as specified in WAC 173-303-330(3). At a minimum, training records will consist of proof of course completion (e.g., electronic signature, supervisor initials, and database) for the training received, and training date(s). Training records are maintained in accordance with the requirements of WAC 173-303-330(2)(c) and (3).

5.4 Training Program Direction

Staff knowledgeable in dangerous waste management procedures directs the training program for Hanford Facility personnel. The responsibility for directing the program may be divided among subject matter experts, unit management, a training organization, or some combination of these. The specific identity of the staff responsible for direction of the program is available from the unit operations supervisor and from the Permittee's central compliance organization.

Direction of the training program is met by the following:

- Subject Matter Experts: Knowledgeable person regarding applicable dangerous waste management requirements to provide for compliance with WAC 173-303.
- Unit Management: Identify roles, responsibilities, and training for Hanford Facility personnel assigned to the unit in accordance with the training plan.
- Training Organization: Collect and record documentation of training taken by Hanford Facility personnel, and maintain training records.

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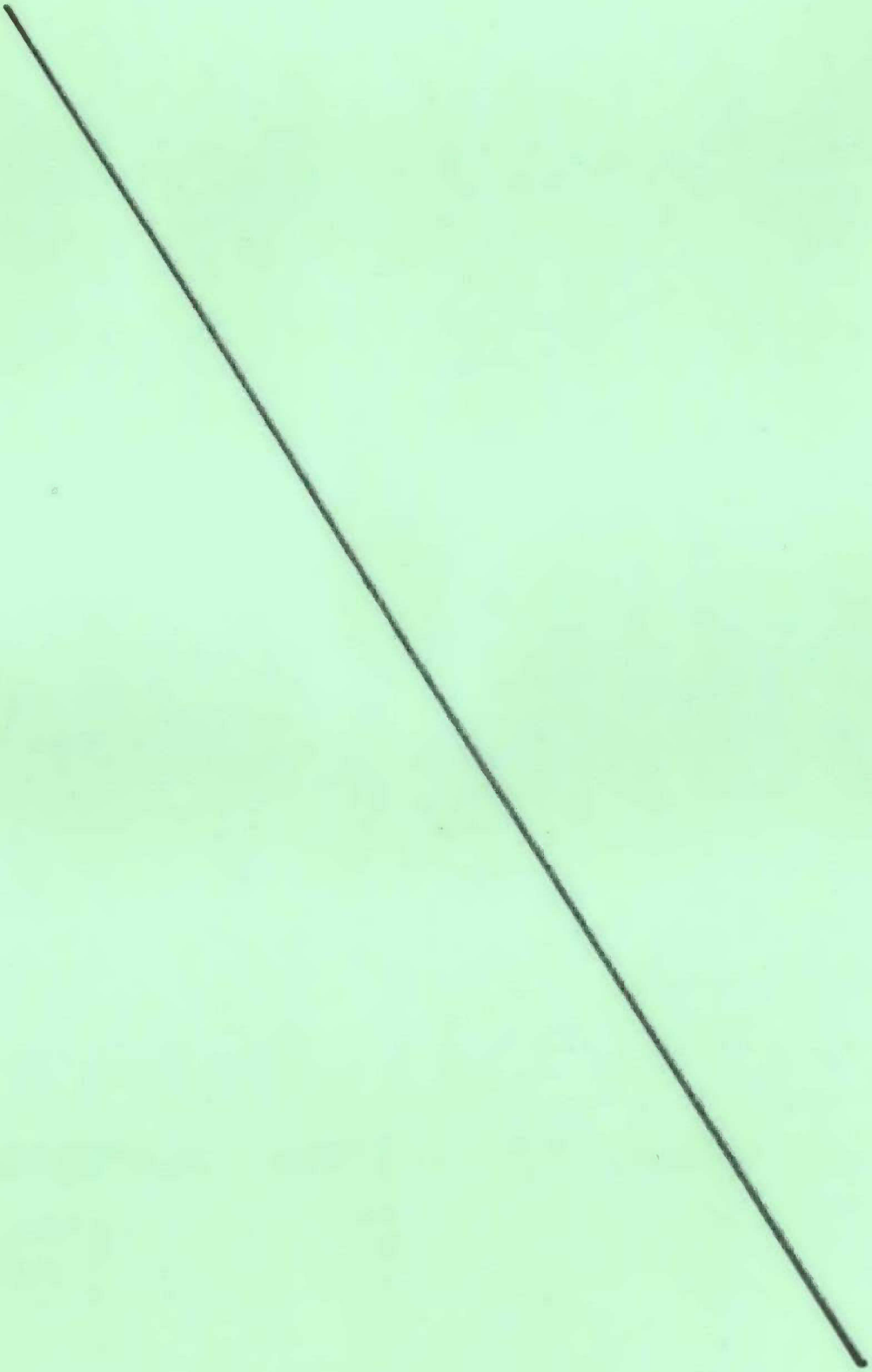

PERMIT ATTACHMENT 6
REPORTS AND RECORDS

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PERMIT ATTACHMENT 6
REPORTS AND RECORDS

TABLE OF CONTENTS

6 REPORTS AND RECORDS 5

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6 REPORTS AND RECORDS

This Attachment identifies reports and record requirements as detailed in the Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit (Permit), Condition II.I, Hanford Facility Operating Record (HFOR) and other Permit Conditions.

Permit Condition[1]	Records and/or Reports		HFOR		Type of submittal		
			General File	Unit Specific File	Verbal[2]	Transmittal letter	Certified package
I.C.3	Quarterly Notification of Class 1 Modification	Unit		X		X	
		Facility	X				
	Class 2 modifications with or without temporary authorization	Unit		X		X	X[5]
		Facility	X				
	Class 3 modifications with or without temporary authorization	Unit		X		X	X[5]
		Facility	X				
I.E.10.b I.E.10.c II.I.1.n	Monitoring and records	Unit		X			
		Facility	X				
I.E.11	Reporting planned changes	Unit		X	X		
		Facility	X				
I.E.12.i	Certification of construction or modifications	Unit		X			X[3]
I.E.13	Anticipated noncompliance	Unit		X	X	X	
		Facility	X				
I.E.14	Transfer of permits	Facility	X			X	
I.E.15.a I.E.15.c	Immediate reporting	Unit		X	X		
		Facility	X				
I.E.15.d	Release or noncompliance not requiring immediate reporting	Unit		X			
		Facility	X				
I.E.16	Written reporting	Unit		X		X	
		Facility	X				
I.E.17.a	Manifest discrepancy report	Unit		X		X	
		Facility	X				
I.E.17.b	Waste tracking form discrepancy report	Unit		X			
I.E.20	Other information	Unit		X	X	X	
		Facility	X				
I.H	Permit related documentation: Permit and all attachments and modifications	Facility	X				
	Permit related documentation: Part B permit application, closure plan, closure/post closure plan, post closure permit application documentation	Unit		X			
II.E.4	Notification of Permit related information	Unit		X		X	
		Facility	X				
II.I.1.a	Waste location	Unit		X			
		Facility	X				

Permit Condition[1]	Records and/or Reports		HFOR		Type of submittal		
			General File	Unit Specific File	Verbal[2]	Transmittal letter	Certified package
II.I.1.b II.D	Waste analysis	Unit		X			
		Facility	X				
II.I.1.c	Occurrence reports	Unit		X			
		Facility	X				
II.I.1.d I.E.18	Unmanifested waste reports	Unit		X		X[4]	
		Facility	X				
II.I.1.e II.A (all)	Hanford Emergency Management Plan and incident records	Unit		X	X	X	
		Facility	X				
II.I.1.f II.C	Personnel training records	Unit		X			
		Facility	X				
II.I.1.g II.B.4	Preparedness and prevention arrangements	Facility	X				
II.I.1.i II.H	Projections of anticipated costs for closure and postclosure and postclosure monitoring and maintenance	Unit		X		X	
		Facility	X				
II.I.1.j	Onsite transportation documentation	Unit		X			
II.I.1.k	Cross-reference of waste location to waste manifest numbers	Unit		X			
		Facility	X				
II.I.1.m	Annual reports	Facility	X				
I.E.19	Annual Noncompliance Report	Facility	X			X	
I.E.22	Annual Dangerous Waste Report	Facility	X				X[5]
II.F.2	Groundwater monitoring records	Unit		X		X	
		Facility	X				
II.I.1.p	Groundwater corrective action	Unit		X			
		Facility	X				
II.I.1.q	Permit condition compliance evaluation system	Unit		X			
		Facility	X				
II.I.1.r	Deed notification (reference only)	Unit		X			X[6]
II.I.1.s II.O	Inspection records	Unit		X		X	
		Facility	X				
II.J.1	Closure certification	Unit		X			X[6]
II.J.3	Notification of, or request for, a permit modification	Unit		X		X	
		Facility	X				
II.K.6	Closure plan deviation	Unit		X			
II.I.1.t II.L.2.b II.L.2.c	Engineering change notices and nonconformance reports	Unit		X		X	
II.L.2.d	As-built drawings	Unit		X			
II.N.2 II.N.3	Receipt of wastes generated offsite	Unit		X		X	
II.R	Equivalent materials	Unit		X			

Permit Condition[1]	Records and/or Reports		HFOR		Type of submittal		
			General File	Unit Specific File	Verbal[2]	Transmittal letter	Certified package
II.S	Land disposal restrictions records	Unit		X		X	
II.U	Mapping methodology report and underground pipeline maps	Facility	X			X	
II.X.1	Schedule extensions	Unit		X		X	
		Facility	X				
II.Y.2.a.iv II.Y.2.b.iv	Corrective Action	Unit		X			
II.Y.3.b	Solid Waste Management Unit notification	Unit		X	X	X	
40 CFR 264.73(B)(9)	Waste minimization/pollution prevention	Unit		X			

[1] Permit Condition, unless otherwise noted.
[2] Verbal reporting in accordance with time frames noted in the specified conditions.
[3] Certified by a registered professional engineer in accordance with WAC 173-303-810(14)(a)(i).
[4] Certification in accordance with Ecology Unmanifested Dangerous Waste Report form.
[5] Certified by Permittees in accordance with WAC 173-303-810(12).
[6] Certified in accordance with WAC 173-303-610.

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U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10

009973

9002931

Hanford Project Office
712 Swift Blvd., Suite 5
Richland, Washington 99352

July 16, 1990

REPLY TO ATTN OF: B5-01

Steven H. Wisness
Hanford Project Manager
U.S. Department of Energy
P.O. Box 550, A6-95
Richland, Washington 99352

Re: Policy on Remediation of Existing Wells and Acceptance Criteria for RCRA and CERCLA

Dear Mr. Wisness:

The Washington State Department of Ecology and the Environmental Protection Agency have developed a policy in response to the issue of using existing wells for RCRA and CERCLA work. This policy should be considered to be effective immediately upon receipt of this letter and the attached description.

Sincerely,

Timothy L. Nord
Hanford Project Manager
Washington State Department of Ecology

Paul T. Day
Hanford Project Manager
Environmental Protection Agency

Enclosure

cc: R. Brown, Ecology
C. Cline, Ecology
K. Fecht, WHC
L. Goldstein, Ecology
T. Michalena, Ecology
L. Powers, WHC
D. Sherwood/D. Einan, EPA
R. Stanley, Ecology
W. Staubitz, USGS
K. Thompson, DOE

DATA QUALITY OBJECTIVES AND REMEDIATION CRITERIA
FOR RCRA AND CERCLA WELLS AT THE HANFORD SITE
JUNE 1990

Introduction

Numerous groundwater monitoring wells exist at the Hanford Site. Some of these wells were recently constructed for use in the Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq) [authorized state program is the Washington State Hazardous Waste Management Act RCW 70.105] and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Such wells have been installed in accordance with the design specifications of the Environmental Protection Agency's (EPA) RCRA Technical Enforcement Guidance Document (OSWER 9950.1). These wells are referred to as "RCRA standard" wells.

Other monitoring wells have been developed for different purposes over the years of Hanford operations and clearly do not meet the current design standards for monitoring wells. For example, some of these wells were designed to monitor the radionuclide levels in groundwater, long before the lists of RCRA and CERCLA parameters were established.

The Washington State Department of Ecology (Ecology), the Department of Energy (DOE), and EPA recognize that each monitoring well used to support the RCRA or CERCLA programs at Hanford must meet the specified data quality objectives (DQO). The most stringent DQOs for a proposed RCRA or CERCLA monitoring well will provide for full chemical analyses of RCRA hazardous constituents (40 CFR Part 264 Appendix IX) and CERCLA hazardous substances, including radioactive constituents. These data would be used to support a risk assessment or final decision by the lead regulatory agency. At the other end of the spectrum, DQOs may limit the data collected to groundwater level measurements for the purpose of aquifer characterization. The DQO established for each well will be dependent on the level of confidence in the quality of data generated. In some cases, an existing monitoring well may be remediated to achieve a higher level of confidence in the quality of data. In other cases, an existing well may present a cross contamination hazard, requiring abandonment in accordance with state regulations (WAC 173-160-560).

Situations Requiring Well Abandonment

The Washington State Attorney General's office has advised Ecology that construction standards for wells (WAC 173-160 et seq.) can only be relaxed if such action does not result in a threat to human health and/or the environment. This criteria must be met for each well at the Hanford Site, regardless of the DQO for the well, irrespective of whether it is being used to directly support the RCRA or CERCLA programs. Any well causing such a threat will have to be abandoned or remediated to the extent necessary to alleviate the threat.

Requirement to Include RCRA Standard Wells

RCRA standard wells are clearly recognized as the highest quality wells by Ecology and EPA. Therefore, some number of RCRA standard wells will be required

in each area of investigation (past-practice operable unit or RCRA disposal unit) (WAC 173-303-645(8)(a)). The number of RCRA standard wells required will be dependent upon the site specific conditions. The locations of proposed new RCRA standard wells will be proposed by DOE and will be subject to approval by the lead regulatory agency.

Criteria for Existing Well as "Equivalent" to RCRA Standard Well

DOE may propose to use an existing monitoring well (non-RCRA standard) as an "equivalent" to a RCRA standard well, thereby justifying the same level of DQOs as established for RCRA standard wells. The proposal must be made in a RCRA Part B permit application, RCRA closure plan, RCRA interim status groundwater monitoring plan, or past-practice operable unit work plan. Ecology or EPA, whichever is the lead regulatory agency, will then determine whether an adequate demonstration of equivalency has been made. This determination will be made in consideration of the following:

1. Construction standards of the existing well must be generally consistent with EPA's RCRA Technical Enforcement Guidance Document. The materials of construction, construction methods, and sampling equipment must be similar to the extent that Ecology or EPA can agree that the most stringent DQOs can be met with the use of that well. Information on the screened interval and the annular seal will be required.

2. If DOE is unable to provide documentation that the construction standards are generally consistent with those required for a RCRA standard well, as stated above, it may provide other documentation attesting to the suitability of that well as an equivalent well. This may include an appropriate statistical demonstration of the analytical data, showing that there is no statistically significant difference between the existing well and an adjacent RCRA standard well. The statistical approach will be subject to approval by the lead regulatory agency. Any statistical demonstration must also be accompanied by all known construction characteristics of the existing well and the RCRA standard well for which the comparison is being made.

Setting Data Quality Objectives

DQOs for each monitoring well used to support the RCRA and CERCLA programs will be proposed by DOE. DQOs for any well are subject to change over time, based on additional information collected. Each monitoring well will fit into one of the following DQO categories, subject to approval by the lead regulatory agency:

1. RCRA standard well or equivalent well. The most stringent DQOs can be met consistently with these wells. Physical and analytical data will be used to support RCRA permit and closure plan decisions, RCRA interim status groundwater monitoring requirements, risk assessments, CERCLA records of decision, effectiveness of remedial or corrective actions, and monitoring during the operation and maintenance phase.

2. Screening well. DQOs for these wells will be limited to screening activities. Wells may be used as indicators to assist in defining the extent of contamination, but may not be used in lieu of RCRA standard

wells or equivalent wells. Such wells may be suitable for certain types of chemical analyses, but not suitable for others. Design, construction, and equipment standards for these wells are substantively inconsistent with EPA's Technical Enforcement Guidance Document, but are not in such condition that remediation or abandonment is required.

3. Radiation Monitoring Well. These wells do not meet design standards for RCRA standard wells or equivalent wells, but documentation is available to show that the screened interval is properly located to monitor the zone in question and that the annular space is properly sealed. The wells are not suitable for monitoring of RCRA constituents, but the design is acceptable for monitoring various radiological parameters. Therefore, such wells can be used for decision making purposes pertaining only to radioactive constituents in the same manner as a RCRA standard well can be used for all constituents.

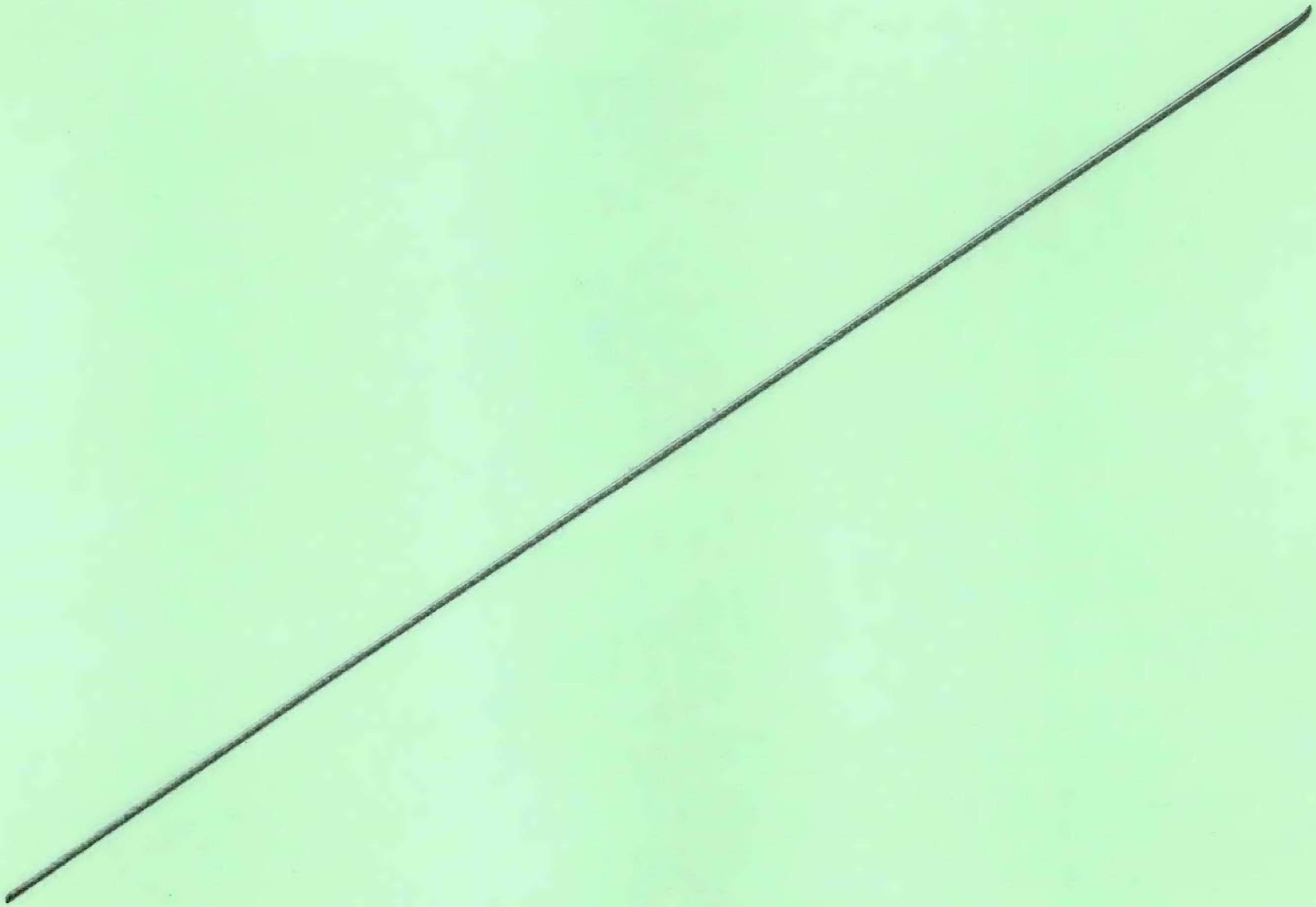
4. Water Level Measurement Well or Piezometer. The DQO for these wells is restricted to obtaining water level measurements or piezometric heads for the purpose of aquifer characterization and monitoring the flow direction. Such wells must be screened or perforated at the appropriate intervals to meet the DQO and the screens or perforations must be of an acceptable length. Documentation must also be provided that the well design and condition is such that the well does not have to be remediated or abandoned.

Minimum Acceptable Standards for Monitoring Well Construction

All monitoring wells, are subject to the following criteria in order to be used to support the RCRA or CERCLA programs at the Hanford Site:

1. Screened or perforated intervals must monitor the appropriate zone of the aquifer, based on the DQO for each well. For a water table well, this means that the screened or perforated interval shall generally not exceed twenty feet in length and shall extend approximately five feet above the seasonal high water table. For piezometers, the screened or perforated intervals shall generally not exceed twenty feet. Exceptions to these distances may be necessary in cases where water table variations or the thickness of the contaminated aquifer are significant. Such exceptions shall be explained in the DQOs for each well and shall be subject to approval by the lead regulatory agency.

2. All wells must be plugged at the bottom and surface pad and eighteen feet of surface annular seal, in accordance with Design and construction -- Well seals (WAC 173-160-550). Depending on location, some wells may require a full annular seal. This will be determined by the lead regulatory agency on a case-by-case basis depending on: (1) the hydraulic characteristics of the soil and aquifer matrix, (2) the known extent of contamination in the vicinity of the well, (3) the proximity of the well to an actual liquid disposal site or a perched saturated zone, and (4) whether the well penetrates a confining layer.



CHPRC ADMINISTRATIVE DOCUMENT PROCESSING AND APPROVAL

DOCUMENT TITLE:	OWNING ORGANIZATION/FACILITY:
Hanford Well Maintenance and Inspection Plan, Previously BHI-01265, Revision 0	S&GRP
Document Number: HNF-56398	**Revision/Change Number:** 1

DOCUMENT TYPE *(Check Applicable)* [X] Plan [ ] Report [ ] Study [ ] Description Document [ ] Other

DOCUMENT ACTION *(Check One)* [X] New [ ] Revision [ ] Cancellation

RESPONSIBLE CONTACTS

	Name	Phone Number
Author:	Cathel, Robert L.	373-9171
Manager:	Cherry, Mark J.	372-2200

DOCUMENT CONTROL

Is the document intended to be controlled within the Document Management Control System (DMCS)? [ ] Yes [X] No

Does document contain scientific and technical information intended for public use? [X] Yes [ ] No

Does document contain controlled-use information [ ] Yes [X] No

DOCUMENT REVISION SUMMARY

NOTE: Provide a brief description or summary of the changes for the document listed.

REVIEWERS **Others**

Name *(print)*	Organization
Oldham, Rick W	ENVIRONMENTAL PROTECTION
Kaas, Jadie	QUALITY SYSTEMS
Ruck, Fred A III	ENVIRONMENTAL PROTECTION
Hildebrand, R. Doug	DOE

APPROVAL SIGNATURES

Author:		
Name: (Print)	Cathel, Robert L.	Date 4/8/14
Responsible Manager:		
Name: (print)	Cherry, Mark J	Date 4-8-14
Other:		
Name: (print)		Date

RELEASE / ISSUE

Not Released into DMCS geb 4-10-14

Date Received for Clearance Process (MM/DD/YYYY)
~~04/08/2014~~ geb 04/10/2014

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- ☐ Journal Article
- ☐ Summary
- ☐ Internet
- ☐ Visual Aid
- ☐ Software
- ☐ Full Paper
- ☒ Report
- ☐ Other _____

B. Document Number HNF-56398 Revision 1

C. Title
Hanford Well Maintenance and Inspection Plan

D. Proposed Internet Address

E. Required Information (MANDATORY)

1. Is document potentially Classified? ◉ No ○ Yes
   Cherry, Mark J
   Manager Required (Print and Sign)
   If Yes _____
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4. UCNI ◉ No ○ Yes
5. Applied Technology ◉ No ○ Yes OUO Exemption No. 5
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1. Title of Journal

G. Complete for a Presentation

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3. Date of Conference _____
4. City/State _____
5. Will Information be Published in Proceedings? ◉ No ○ Yes
6. Will Material be Handed Out? ◉ No ○ Yes

H. Information Owner/Author/Requestor
Cathel, Bob L
(Print and Sign)

Responsible Manager
Cherry, Mark J
(Print and Sign)

Approval by Direct Report to President (Speech/Articles Only)
(Print and Sign)

I. Reviewers	Yes	Print	Signature	Public Y/N (If N, complete J)
General Counsel	☒	Hatcher, Mel N	per email 04/08/14 BL	(Y) / N
Office of External Affairs	☐			Y / N
DOE	☒	Hildebrand, R Doug	per email 04/10/14 BL	(Y) / N
Other	☒	Oldham, Rick W	per email 04/08/14 BL	(Y) / N
Other	☒	Kaas, Jadie L	per email 04/10/14 BL	(Y) / N
Other	☒	Ruck, Fred A	per email 04/08/14 BL	(Y) / N

J. Comments

Information Clearance Approval
APPROVED
By GE Bratton at 10:10 am, Apr 10, 2014

Approved for Public Release; Further Dissemination Unlimited

If Additional Comments, Please Attach Separate Sheet

A-6001-401 (REV 5)

Dodge, Bonnie J

From: Cathel, Robert L
Sent: Tuesday, April 08, 2014 9:12 AM
To: Dodge, Bonnie J
Subject: RE: HNF-56398 Rev 1.docx

Bonnie,

I approve these changes. Thanks.

Bob

From: Dodge, Bonnie J
Sent: Tuesday, April 08, 2014 9:10 AM
To: Cathel, Robert L
Subject: HNF-56398 Rev 1.docx

Approve changes. You can use this native file as you wish, I will start the clearance process.

B

Dodge, Bonnie J

From: Oldham, Richard W
Sent: Tuesday, April 08, 2014 9:38 AM
To: Dodge, Bonnie J
Subject: Approve: Approval - HNF-56398 Revision 1

Dodge, Bonnie J

From: Kaas, Jadie L
Sent: Thursday, April 10, 2014 7:59 AM
To: Dodge, Bonnie J
Subject: Approve: Approval - HNF-56398 Revision 1

Dodge, Bonnie J

From: Ruck, Fred A III
Sent: Tuesday, April 08, 2014 9:46 AM
To: Dodge, Bonnie J
Subject: Approve: Approval - HNF-56398 Revision 1

Dodge, Bonnie J

From: Hildebrand, R D (Doug)
Sent: Thursday, April 10, 2014 7:19 AM
To: Dodge, Bonnie J; Kaas, Jadie L
Subject: RE: Approval - HNF-56398 Revision 1

I approve this document.

Doug Hildebrand

From: Dodge, Bonnie J
Sent: Thursday, April 10, 2014 6:55 AM
To: Hildebrand, R D (Doug); Kaas, Jadie L
Subject: FW: Approval - HNF-56398 Revision 1
Importance: High

I need this approval please. Doug, if you don't want to approve this document, please send me an email back.

As always, thank you in advance

Bonnie Dodge
Soil & Groundwater Remediation Project

CH2MHILL

WOMEN'S NETWORK CH2MHILL

(509)373-4284 office
(509)713-0053 cell
Bonnie_J_Dodge@rl.gov

We shall never know all the good that a simple smile can do. Mother Teresa

The contents of this message may be personal and do not reflect the views or position of the U.S. Department of Energy or the Federal Government.

From: Dodge, Bonnie J
Sent: Tuesday, April 08, 2014 9:31 AM
To: Cherry, Mark J; Hatcher, Melvin N; Hildebrand, R D (Doug); Oldham, Richard W; Kaas, Jadie L; Ruck, Fred A III
Cc: Cathel, Robert L
Subject: Approval - HNF-56398 Revision 1

Please approve via voting buttons. Any questions, please contact Bob Cathel directly.

As always, thank you in advance

Bonnie Dodge

Soil & Groundwater Remediation Project

(509)373-4284 office
(509)713-0053 cell
Bonnie_J_Dodge@rl.gov

We shall never know all the good that a simple smile can do. Mother Teresa

The contents of this message may be personal and do not reflect the views or position of the U.S. Department of Energy or the Federal Government.

Dodge, Bonnie J

From: Hatcher, Melvin N
Sent: Tuesday, April 08, 2014 9:52 AM
To: Dodge, Bonnie J
Subject: Approve: Approval - HNF-56398 Revision 1

HNF-56398
Revision 1

Hanford Well Maintenance and Inspection Plan

Previously BHI-01265, Revision 0

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788

CH2MHILL
Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352

**Approved for Public Release;
Further Dissemination Unlimited**

HNF-56398
Revision 1

Hanford Well Maintenance and Inspection Plan

Previously BHI-01265, Revision 0

Document Type: PLAN Program/Project: S&GRP

R. L. Cathel
CH2M HILL Plateau Remediation Company

Date Published
April 2014

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788

CH2MHILL
Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352

APPROVED
By GE Bratton at 10:11 am, Apr 10, 2014

Release Approval Date

**Approved for Public Release;
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Printed in the United States of America

Hanford Well Maintenance and Inspection Plan
HNF-56398, Revision 1
Previously BHI- 01265, Revision 0

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4.0 WELL INSPECTIONS 4

5.0 WELL MAINTENANCE 4

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7.0 BIBLIOGRAPHY 5

Terms

WAC	*Washington Administrative Code*
TSD	treatment, storage, and disposal
RCRA	*Resource Conservation and Recovery Act of 1976*
RCW	*Revised Code of Washington*

Hanford Well Maintenance and Inspection Plan
HNF-56398, Revision 1
Previously BHI- 01265, Revision 0

1.0 INTROUCTION

This document presents the well maintenance and inspection plan for use in supporting groundwater activities at the Hanford Site. Wells located across the Hanford Site are used by Site contractors for a variety of groundwater programs. As such, these wells require various types of inspections and/or maintenance during their lifecycles. The wells that must be maintained are defined in Section 2.0, "Requirements."

2.0 REQUIREMENTS

Washington Administrative Code (WAC) 173-160, "Minimum Standards for Construction and Maintenance of Wells," states "It is the responsibility of the resource protection well operator, resource protection well contractor and the property owner to take whatever measures are necessary to guard against waste and contamination of the groundwater resource."

The provisions of the dangerous waste section of the *Resource Conservation and Recovery Act of 1976 Permit for the Treatment, Storage, and Disposal of Dangerous Waste at the Hanford Site* Permit are controlled by the "State of Washington Hazardous Waste Management Act of 1976" (RCW 70.105). Part II.F.2.a of (WA7890008967) states that "...the Permittees shall inspect the integrity of active resource protection wells as defined by WAC 173-160-030 subject to this Permit at least once every five (5) years." Wells subject to the RCRA Permit requirements are defined as wells actively monitoring treatment, storage, and disposal (TSD) unit closures (in Part V of the Permit); TSD operating units (in Part III of the Permit); and TSD units undergoing post-closure/modified closure (Part VI of the Permit).

3.0 SCHEDULE

The list of RCRA wells to be considered for maintenance or inspection will be based on a review of information on the current wells. This review may include field sampling notations, previous inspection results, or other data collected during sampling of the wells. In addition, the installation date and/or location of a well will also be considered.

Well inspections, consistent with the requirements in permit condition II.F.2.a, will occur in 2015, and continue every 5 years after that. The schedule will accommodate changes that will occur with the addition of new wells, adjustments in the TSD unit closures, and wells that are no longer needed for monitoring.

4.0 WELL INSPECTIONS

Well inspections are conducted as an integral part of field maintenance activities. Inspections include visual examination of the well site, surface components of the well structure (e.g., barrier posts, concrete surface pad and seal, protective well casing, well cap), identification of equipment installed in the well, and where possible measurements of the depths to water and/or bottom of the well. Inspections are documented on field reports.

5.0 WELL MAINTENANCE

Based on review of the 5 year inspection results, or other evaluations such as field sampling notations, well sampling issues, etc., well maintenance for groundwater monitoring wells will be performed as needed. Well maintenance will include the following tasks, as necessary, to restore the well to its intended use:

1. Removing groundwater sampling pump system and/or aquifer testing instrumentation/equipment
2. Inspecting and repairing (or replacing, as necessary) the sampling pump system and/or aquifer testing instrumentation/equipment
3. Cleaning the well casing perforations
4. Inspecting and cleaning well screen or repair of well screen (if possible)
5. Removing debris and fill material
6. Performing borehole video camera surveillance
7. Re-installing sampling and/or aquifer testing instrumentation/equipment
8. Redeveloping the well after performing maintenance
9. Inspecting final conditions after well maintenance (e.g. cap is replaced, concrete surface pad integrity, lock is secure, etc.)
10. Documenting well conditions and maintenance activities

6.0 REFERENCES

WA7890008967, 2007, *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste*, as amended, Washington State Department of Ecology, Richland, Washington *Resource Conservation and Recovery Act of 1976*, 42 U.S.C. 6901, et seq.

RCW 70.105, "State of Washington Hazardous Waste Management Act of 1976, "*Revised Code of Washington*, as amended.

WAC 173-160, "Minimum Standards for Construction and Maintenance of Wells," *Washington Administrative Code*, as amended.

7.0 BIBLIOGRAPHY

DOE-RL, 1994, *Hanford Site Groundwater Management Program*, DOE/RL-89-12, as amended, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

PERMIT ATTACHMENT 9
PERMIT APPLICABILITY MATRIX

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PERMIT ATTACHMENT 9
PERMIT APPLICABILITY MATRIX

PART I									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
I.A.	**EFFECT OF PERMIT**								
I.A.1.		*	*	*	*	*	*	*	
I.A.2.		*	*	*	*	*	*	*	
I.A.3.		*	*		*	*	*	*	
I.A.4.	Coordination with the HFFACO		*		*	*	*	*	
I.B.	**PERSONAL AND PROPERTY RIGHTS**		*		*	*	*	*	
I.C.	**PERMIT ACTIONS**								
I.C.1.	Modification, Revocation, Reissuance, or Termination		*		*	*	*	*	
I.C.2.	Filing of a Request		*		*	*	*	*	
I.C.3.	Modifications		*		*	*	*	*	
I.D.	**SEVERABILITY**								
I.D.1.	Effect of Invalidation		*		*	*	*	*	
I.D.2.	Final Resolution		*		*	*	*	*	
I.E.	**DUTIES AND REQUIREMENTS**								
I.E.1.	Duty to Comply		*		*	*	*	*	
I.E.2.	Compliance Not Constituting Defense		*		*	*	*	*	
I.E.3.	Duty to Reapply		*		*	*	*	*	
I.E.4.	Permit Expiration & Continuation		*		*	*	*	*	
I.E.5.	Need to Halt or Reduce Activity Not a Defense		*		*	*	*	*	
I.E.6.	Duty to Mitigate		*		*	*	*	*	
I.E.7.	Proper Operation & Maintenance		*			*	*	*	
I.E.8.	Duty to Provide Information		*		*	*	*	*	
I.E.9.	Inspection & Entry		*		*	*	*	*	
I.E.10.	Monitoring & Records								
I.E.11.	Reporting Planned Changes		*			*	*	*	
I.E.12.	Certification of Construction or Modification		*				*		
I.E.13.	Anticipated Noncompliance		*		*	*	*	*	

CATEGORIES ARE DEFINED AS FOLLOWS:

A. Leased Land
B. North Slope and ALE
C. Interim Status TSD Units
D. Areas Between TSDs (excluding A and B)
E. TSD Unit Closures (in Part V)
F. TSD Operating Units (in Part III)
G. TSD Units in Post-Closure/Modified Closure (in Part VI)

* Condition applies to this category, as modified by applicable footnotes and qualifiers.

1 – For Category B, Part I Conditions only apply if future TSD activities are begun on the North Slope or ALE.
2 – For Category C, all Part I Conditions apply to activities subject to Conditions II.U. and II.V.
3 – For Category D, Part I Conditions only apply to activities subject to Conditions II.A., II.C., II.D.4., II.G., II.I., II.L.2.e, II.O., II.Q., II.S., II.T., II.X., and II.Y.

PART I									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
I.E.14.	Transfer of Permits		*			*	*	*	
I.E.15.	Immediate Reporting		*		*	*	*	*	
I.E.16.	Written Reporting		*		*	*	*	*	
I.E.17.	Manifest Discrepancy Report								
I.E.17.a			*			*	*	*	
I.E.17.b			*		*	*	*	*	
I.E.18.	Unmanifested Waste Report		*			*	*	*	
I.E.19.	Other Noncompliance		*		*	*	*	*	
I.E.20.	Other Information		*		*	*	*	*	
I.E.21.	Reports, Notifications, & Submissions		*		*	*	*	*	
I.E.22.	Annual Report		*		*	*	*	*	
I.F.	**SIGNATORY REQUIREMENT**		*		*	*	*	*	
I.G.	**CONFIDENTIAL INFORMATION**		*		*	*	*	*	
I.H.	**DOCUMENTS TO BE MAINTAINED AT FACILITY SITE**		*		*	*	*	*	

CATEGORIES ARE DEFINED AS FOLLOWS:

A. Leased Land
B. North Slope and ALE
C. Interim Status TSD Units
D. Areas Between TSDs (excluding A and B)
E. TSD Unit Closures (in Part V)
F. TSD Operating Units (in Part III)
G. TSD Units in Post-Closure/Modified Closure (in Part VI)

* Condition applies to this category, as modified by applicable footnotes and qualifiers.

1 – For Category B, Part I Conditions only apply if future TSD activities are begun on the North Slope or ALE.
2 – For Category C, all Part I Conditions apply to activities subject to Conditions II.U. and II.V.
3 – For Category D, Part I Conditions only apply to activities subject to Conditions II.A., II.C., II.D.4., II.G., II.I., II.L.2.e, II.O., II.Q., II.S., II.T., II.X., and II.Y.

PART II									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
II.A.	**FACILITY CONTINGENCY PLAN**								
II.A.1.					*	*	*	*	For Category D, II.A Conditions only apply to releases of hazardous substances that threaten human health or the environment.
II.A.2.					*	*	*	*	
II.A.3.					*	*	*	*	
II.A.4.					*	*	*	*	
II.B.	**PREPAREDNESS AND PREVENTION**								
II.B.1.						*	*		
II.B.2.						*	*		
II.B.3.						*	*		
II.B.4.						*	*		
II.B.5						*	*		
II.C.	**PERSONNEL TRAINING**								
II.C.1.						*	*	*	
II.C.2.					*	*	*	*	
II.C.3.						*	*	*	
II.C.4.					*	*	*	*	For Category D, Condition II.C.4 will not apply to unrestricted (publicly accessible) areas.
II.D.	**WASTE ANALYSIS**								
II.D.1.						*	*	*	
II.D.2.						*	*	*	
II.D.3						*	*	*	
II.E.	**QUALITY ASSURANCE/ QUALITY CONTROL**								
II.E.1.						*	*	*	
II.E.2.						*	*	*	
II.F.	**GROUND WATER AND VADOSE ZONE MONITORING**					*	*	*	

CATEGORIES ARE DEFINED AS FOLLOWS:

A. Leased Land	E. TSD Unit Closures (Part V)
B. North Slope and ALE	F. TSD Operating Units (Part III)
C. Interim Status TSD Units	G. TSD Units in Post Closure/Modified Closure (Part VI)
D. Areas Between TSDs (excluding A and B)	

*Condition applies to this category, as modified by applicable footnotes and qualifiers.

PART II									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
II.F.1.	Purgewater Management					*	*	*	
II.F.2.	Well Remediation and Abandonment					*	*	*	
II.F.3.	Well Construction					*	*	*	
II.G.	**SITING CRITERIA**				*		*		**For Category D, Condition II.G only applies if a new TSD unit is to be sited.**
II.H.	**RECORDKEEPING AND REPORTING**					*	*	*	
II.I.	**FACILITY OPERATING RECORD**								For Category D, II.I Conditions only apply to activities subject to this Permit as defined by this matrix. For Category E, Condition applicability to be specified in Part V. Condition II.I only applies to existing records and records prepared after the date of Permit issuance.
II.I.1.		*	*		*	*	*	*	
II.I.1.a.		*	*		*	*	*	*	
II.I.1.b.							*	*	
II.I.1.c.					*	*	*	*	
II.I.1.d.						*	*	*	
II.I.1.e.			*		*				
II.I.1.f.					*	*	*	*	
II.I.1.g.						*	*	*	
II.I.1.h.	Reserved Condition								
II.I.1.i.	Reserved Condition								
II.I.1.j.						*	*	*	
II.I.1.k.					*	*	*	*	
II.I.1.l.	Reserved Condition								
II.I.1.m.						*	*	*	
II.I.1.n.					*	*	*	*	
II.I.1.o.	Reserved Condition								
II.I.1.p.			*		*	*	*	*	
II.I.1.q.			*		*	*	*	*	
II.I.1.r.					*	*	*	*	
II.I.1.s.					*	*	*	*	
II.I.1.t.					*	*	*	*	
II.J.	**FACILITY CLOSURE**								
II.J.1.						*	*	*	

CATEGORIES ARE DEFINED AS FOLLOWS:

A. Leased Land	E. TSD Unit Closures (Part V)
B. North Slope and ALE	F. TSD Operating Units (Part III)
C. Interim Status TSD Units	G. TSD Units in Post Closure/Modified Closure (Part VI)
D. Areas Between TSDs (excluding A and B)	

*Condition applies to this category, as modified by applicable footnotes and qualifiers.

PART II									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
II.J.2.						*	*	*	
II.J.3.						*	*	*	
II.J.4.						*	*	*	
II.K.	**SOIL/GROUND WATER CLOSURE PERFORMANCE STANDARDS**								
II.K.1.						*	*	*	
II.K.2.						*	*	*	
II.K.3.						*	*	*	
II.K.4.						*	*	*	
II.K.5.						*	*	*	
II.K.6.						*	*	*	
II.K.7.						*	*	*	
II.L.	**DESIGN AND OPERATION OF FACILITY**								
II.L.1.	Proper Design and Construction					*	*	*	
II.L.2.	Design Changes, Nonconformance and as-built Drawings					*	*	*	Condition II.L.2, applies to Categories E & G only if it is a landfill closure.
II.L.2.a.						*	*	*	
II.L.2.b.						*	*	*	
II.L.2.c.						*	*	*	
II.L.2.d.						*	*	*	
II.L.2.e	Facility Compliance				*	*	*	*	
II.M.	SECURITY					*	*	*	
II.N.	**RECEIPT OF DANGEROUS WASTES GENERATED OFF-SITE**								
II.N.1.	Receipt of Off-Site Waste						*		
II.N.2.	Waste From Sources Outside the U.S.						*		
II.N.3.	Notice to Generator						*		

CATEGORIES ARE DEFINED AS FOLLOWS:

A. Leased Land	E. TSD Unit Closures (Part V)
B. North Slope and ALE	F. TSD Operating Units (Part III)
C. Interim Status TSD Units	G. TSD Units in Post Closure/Modified Closure (Part VI)
D. Areas Between TSDs (excluding A and B)	

*Condition applies to this category, as modified by applicable footnotes and qualifiers.

PART II									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
II.O.	**GENERAL INSPECTION REQUIREMENTS**								
II.O.1.					*	*	*	*	
II.O.1.a.					*				
II.O.1.b.					*				
II.O.1.c.					*				
II.O.1.d.					*				
II.O.2.					*	*	*	*	
II.O.3.					*	*	*	*	
II.P.	**MANIFEST SYSTEM**								
II.P.1.						*	*	*	
II.P.2.						*	*	*	
II.Q.	**ON-SITE TRANSPORTATION**								
II.Q.1.					*	*	*	*	
II.Q.2.					*	*	*	*	
II.R.	**EQUIVALENT MATERIALS**								
II.R.1.						*	*	*	
II.R.2.						*	*	*	
II.R.3.						*	*	*	
II.S.	**LAND DISPOSAL RESTRICTIONS**				*	*	*	*	
II.T.	**ACCESS AND INFORMATION**				*	*	*	*	
II.U.	**MAPPING OF UNDERGROUND PIPING**								
II.U.1.	Reserved Condition								
II.U.2.	Reserved Condition								
II.U.3.				*		*	*	*	
II.U.4.				*		*	*	*	
II.V.	**MARKING OF UNDERGROUND PIPING**			*		*	*	*	
II.W.	**OTHER PERMITS AND/OR APPROVALS**								
II.W.1.						*	*	*	
II.W.2.						*	*	*	

CATEGORIES ARE DEFINED AS FOLLOWS:

A. Leased Land	E. TSD Unit Closures (Part V)
B. North Slope and ALE	F. TSD Operating Units (Part III)
C. Interim Status TSD Units	G. TSD Units in Post Closure/Modified Closure (Part VI)
D. Areas Between TSDs (excluding A and B)	

*Condition applies to this category, as modified by applicable footnotes and qualifiers.

PART II									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
II.W.3.						*	*	*	
II.X.	**SCHEDULE EXTENSIONS**								Condition II.X, only applies to Category C if activities are subject to Conditions II.U, and II.V.
II.X.1.				*	*	*	*	*	
II.X.2.				*	*	*	*	*	Condition II.X, only applies to Category D if activities are subject to this Permit as defined by this matrix.
II.Y.	**CORRECTIVE ACTION**	*	*	*	*	*	*	*	
II.Y.1.	Compliance with Chapter 173-340 WAC	*	*	*	*	*	*	*	
II.Y.1.a.		*	*	*	*	*	*	*	
II.Y.1.b.		*	*	*	*	*	*	*	
II.Y.1.c.		*	*	*	*	*	*	*	
II.Y.1.d.		*	*	*	*	*	*	*	
II.Y.1.e.		*	*	*	*	*	*	*	
II.Y.1.f.		*	*	*	*	*	*	*	
II.Y.1.g.		*	*	*	*	*	*	*	
II.Y.2.	Acceptance of Work Under Other Authorities or Programs and Integration with the FFACO	*	*	*	*	*	*	*	
II.Y.2.a.		*	*	*	*	*	*	*	
II.Y.2.b.		*	*	*	*	*	*	*	
II.Y.2.c.		*	*	*	*	*	*	*	
II.Y.2.d.		*	*	*	*	*	*	*	
II.Y.3.	Releases of Dangerous Waste or Dangerous Constituents Not Covered by the FFACO	*	*	*	*	*	*	*	
II.Y.3.a.	U.S. Ecology	*	*	*	*	*	*	*	
II.Y.3.b.	Newly Identified Solid Waste Management Units and Newly Identified Releases of Dangerous Waste or Dangerous Waste Constituents	*	*	*	*	*	*	*	
II.Z	**WASTE MINIMIZATION**								
II.Z.1							*		
II.Z.1.a							*		

CATEGORIES ARE DEFINED AS FOLLOWS:

A. Leased Land	E. TSD Unit Closures (Part V)
B. North Slope and ALE	F. TSD Operating Units (Part III)
C. Interim Status TSD Units	G. TSD Units in Post Closure/Modified Closure (Part VI)
D. Areas Between TSDs (excluding A and B)	

*Condition applies to this category, as modified by applicable footnotes and qualifiers.

PART II									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
II.Z.1.b							*		
II.Z.2							*		
II.AA	**AIR EMISSION STANDARDS FOR PROCESS VENTS**						*		
II.BB	**AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS**						*		
II.CC	**AIR EMISSION STANDARDS FOR TANKS, SURFACE IMPOUNDMENTS, AND CONTAINERS**						*		

CATEGORIES ARE DEFINED AS FOLLOWS:

A. Leased Land	E. TSD Unit Closures (Part V)
B. North Slope and ALE	F. TSD Operating Units (Part III)
C. Interim Status TSD Units	G. TSD Units in Post Closure/Modified Closure (Part VI)
D. Areas Between TSDs (excluding A and B)	

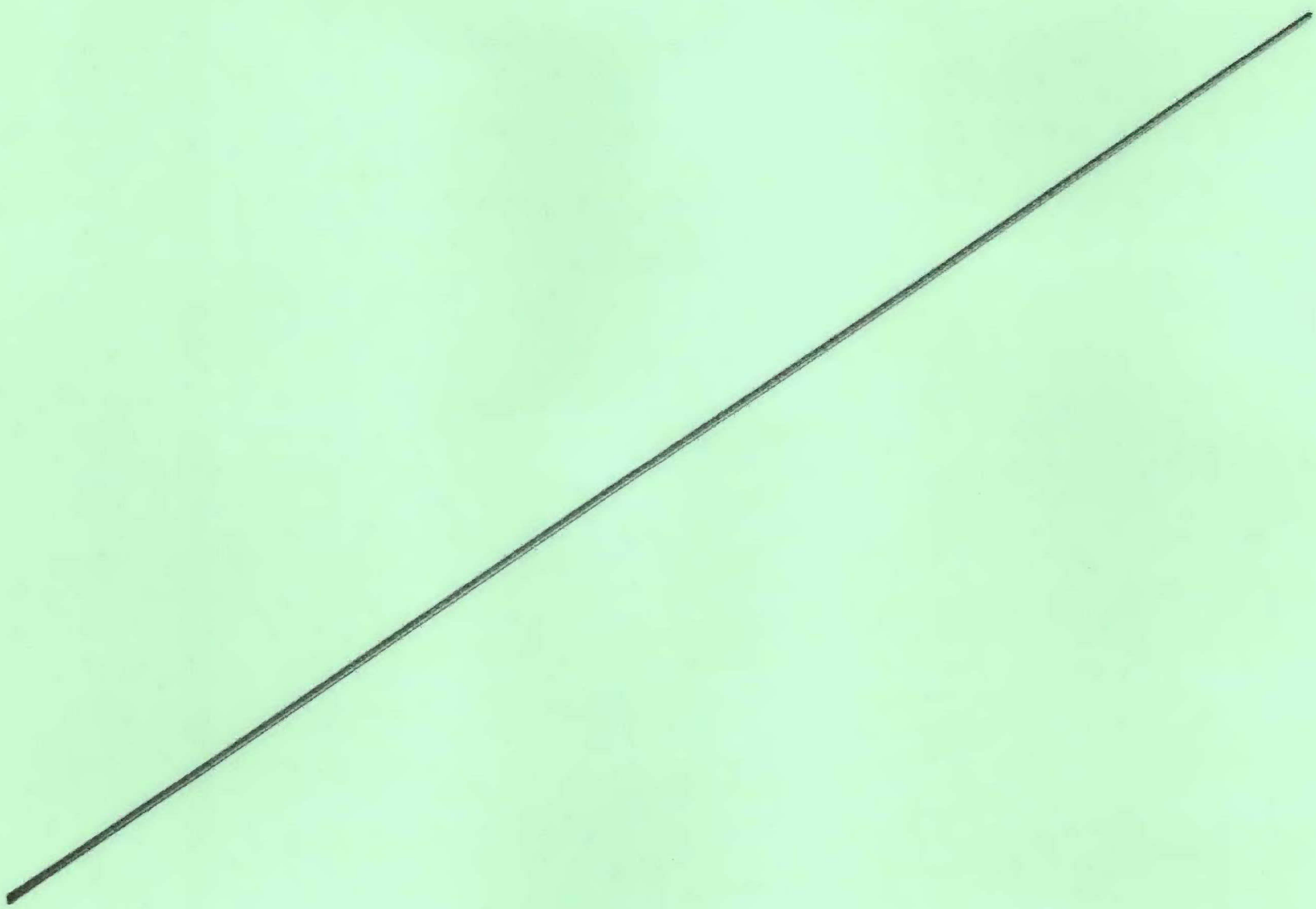
*Condition applies to this category, as modified by applicable footnotes and qualifiers.

PART III									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
III.	**UNIT SPECIFIC CONDITIONS FOR FINAL STATUS OPERATIONS**								
III.2	PUREX Storage Tunnels						*		
III.3	Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility						*		
III.4	242-A Evaporator						*		
III.5	325 Hazardous Waste Treatment Units						*		
III.10	Waste Treatment and Immobilization Plant						*		
III.11	Integrated Disposal Facility						*		
III.15	331-C Storage Unit						*		
III.16	400 Area Waste Management Unit						*		
PART IV									
IV.	**UNIT SPECIFIC CONDITIONS FOR CORRECTIVE ACTION**								
IV.1	100-NR-1				*	*			
PART V									
V.	**UNIT SPECIFIC CONDITIONS FOR UNITS UNDERGOING CLOSURE**								
V.1	1325-N Liquid Waste Disposal Facility					*			
V.2	1301-N Liquid Waste Disposal Facility					*			
V.3	1324-N Surface Impoundment &1324-NA Surface Impoundment					*			
PART VI									
VI.	**UNIT SPECIFIC CONDITIONS FOR UNITS IN POST CLOSURE**								
VI.1	300 Area Process Trenches							*	
VI.2	183-H Solar Evaporation Basins							*	

CATEGORIES ARE DEFINED AS FOLLOWS:

A. Leased Land	E. TSD Unit Closures (Part V)
B. North Slope and ALE	F. TSD Operating Units (Part III)
C. Interim Status TSD Units	G. TSD Units in Post Closure/Modified Closure (Part VI)
D. Areas Between TSDs (excluding A and B)	

*Condition applies to this category, as modified by applicable footnotes and qualifiers.



PERMIT ATTACHMENT 10
STRATEGY FOR HANDLING AND DISPOSING OF PURGEWATER (JULY 1990)

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PERMIT ATTACHMENT 10
STRATEGY FOR HANDLING AND DISPOSING OF PURGEWATER (JULY 1990)

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PERMIT ATTACHMENT 10
STRATEGY FOR HANDLING AND DISPOSING OF PURGEWATER AT THE HANFORD SITE (JULY 1990)

1 PURPOSE AND OBJECTIVES

1.1 The Purpose of this Document

1.1.1 Describe the strategy for managing purgewater at the Hanford Site, Washington.

1.1.2 Describe purgewater collection criteria for groundwater monitoring wells on the Hanford Site, Washington.

1.1.3 Describe an implementation plan for demonstrating facility compliance in collecting, storing, handling, and disposing of purgewater on the Hanford Site, Washington.

1.1.4 Set forth by written agreement the requirements for the management of purgewater on the Hanford Site, Washington.

1.2 The Objectives of the Strategy

1.2.1 Continue with existing groundwater monitoring activities and proceed with new groundwater monitoring well installation pursuant to the requirements of: (1) the State of Washington Hazardous Waste Management Act of 1976 (Revised Code of Washington [RCW] 70.105) and Washington Administrative Code (WAC) 173-303, (2) the *Resource Conservation and Recovery Act of 1976* (RCRA)", (3) the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA), and (4) the *Atomic Energy Act of 1954* as amended (AEA).

1.2.2 Comply with milestones set forth In the Hanford Federal Facility Agreement and Consent Order (Informally referred to as the Tri-Party Agreement) for groundwater monitoring.

1.2.3 Provide an acceptable level of environmental protection.

2 BACKGROUND

2.1 Statement of the Problem

2.1.1 Monitoring of groundwater for radioactive and chemical constituents at the Hanford Site is required by the U.S. Department of Energy-Richland Operations Office (DOE-RL),the Washington State Department of Ecology (Ecology)and the U.S. Environmental Protection Agency (EPA).Groundwater is withdrawn from wells for: (1) developing newly constructed groundwater monitoring wells, (2) purging of existing wells prior to sample collection, (3) aquifer testing and (4) periodic cleaning and renovating of existing monitoring wells.

2.1.2 For purposes of this strategy, all groundwater extracted from the aquifer pursuant to actions one through four described in paragraph 2.1.1 above shall be defined as purgewater.

2.1.3 Portions of the uppermost-unconfined aquifer underlying the Hanford Site are being extensively monitored due to elevated concentrations of various chemical and radionuclide constituents. When contaminated purgewater is generated, it shall be classified as containing newly generated solid waste and shall be subject to hazardous waste designation as described in Sections 2.1.4 and 3.6 of this strategy. However, for purposes of clarification and compliance with RCW 70.105, water contained in. the aquifer shall not be considered a solid waste.

2.1.4 To protect public hea1th and safety and protect the environment from the improper disposal or management of purgewater, DOE-RL will manage purgewater on the Hanford Site as agreed to in this document.

2.2 Impact on Programs

2.2.1 Groundwater well installation projects and monitoring programs at Hanford are impacted by the current Hanford Site capacity to store, treat, and dispose of purgewater in accordance with regulatory requirements of dangerous waste management as promulgated in WAC 173-303. RCRA and operable unit specific projects and programs were instituted for compliance with the Tri-Party Agreement. However, no milestones for defining treatment or disposal criteria for purgewater are set forth in that agreement. Consequently, until approved industrial technologies are available for treatment of contaminated purgewater containing chemical constituents and radionuclides above agreed to collection criteria, purgewater will be stored on the Hanford Site in accordance with this agreement.

2.2.2 The large volume of purgewater generated during aquifer testing presents logistical handling, transportation, and storage problems. However, the generation of aquifer test purgewater is necessary to determine physical characteristics of the Hanford Site hydrology. Therefore, it is herein agreed that aquifer testing will be performed in a manner consistent with the items listed below: (I) in geographical areas on the Hanford Site where constituent concentrations are lower than the health or environmental-based criteria shown in Tables 1 and 3 of this document as determined by data from adjacent wells and/or initial well development samples. aquifer test purgewater may be discharged to the ground and prior approval by Ecology is not required (2) Aquifer testing may be performed at the discretion of DOE-RL in any area, without prior Ecology approval, if the resulting purgewater is collected and stored for treatment as required by this strategy (3) Aquifer testing performed as part of an approved past practice work plan. RCRA assessment or closure plan will be performed in accordance with section 3.2.5 of this strategy; (4) In selected cases it may be determined that-the benefits of performing pump tests in contaminated areas, that require too large a quantity of purgewater to reasonably contain (and hence may require alternate purgewater management) maybe justified. In this case, Section 3.7 of this strategy will be invoked.

3 PURGEWATER MANAGEMENT CRITERIA

Existing federal and state regulations and policy guidance are indeterminate regarding specific disposal criteria or standards for the handling and management of purgewater. Unmanaged disposal of purgewater containing significant quantities of hazardous and/or radioactive liquids to the soil could potentially allow these substances to accumulate and create additional contaminated sites requiring remediation. Collection, storage, treatment, and disposal of purgewater creates additional management and environmental concerns. At present, effective treatment, methods have not been developed for all of the hazardous and radioactive substances and combinations of mixed wastes that may occur in Hanford groundwater. Treatment of very low concentration contaminated water is in many instances ineffectual. Therefore, a balanced approach to purgewater management is needed. The objective of this strategy is to provide an acceptable level of health, and environmental protection by minimizing the impact of soil discharge of contaminated purgewater. This is accomplished by requiring the collection of purgewater with levels of hazardous and radioactive constituents above an agreed-to health and environmental based criteria for potential future treatment and disposal. The result is a cost effective, environmentally justifiable program. Effective use of federal funds will result in a greater environmental return per dollar spent as these dollars can be allotted to more serious environmental and health risk problems. Collection of all purgewater is not necessary due to the minimal health and environmental risk incurred in discharging these contaminants to the ground. Purgewater that may be discharged to the ground without treatment under this strategy is of relatively low concentration and volume, and is managed to minimize the accumulation of contamination and to reduce the potential of driving any existing contaminants further into the soil. The fact that the Hanford Site is in an arid environment with minimal recharge reinforces this approach.

To clarify these issues, DOE-RL, Ecology, and EPA herein agree to the following purgewater management criteria for implementation at the Hanford Site, Washington. The effectiveness of this program will be evaluated by the three parties over the next year, incorporating changes as appropriate.

3.1 Collection Criteria

3.1.1 Purgewater from Hanford Site monitoring wells will be managed in accordance with health and environmental based criteria. Purgewater collection criteria will be based on 10 times Maximum Contaminant levels (10X MCLs) for drinking water or 10 times EPA's Chronic Freshwater Toxicity levels (CFWTLs)(10X CFWTLs), or 10 times the Practical Quantitation limit (PQLs) of SW 846 for Table 1 constituents; with the application of the most· "restrictive criteria for designation of purgewater requiring collection. Use of EPA's designation of CFWTLs is included in this strategy as environmental-based criteria as a result of the protection afforded to freshwater biota. The radionuclide standards are based on 10X the MCLs referenced in National Interim Primary Drinking Water Regulations (see also 40CFR141.16(b) dated July 1, 1989) except for uranium and plutonium standards which are based on ten times (10X) one twenty fifth Derived Concentration Guides as defined in DOE Order 5400.5. Tritium is not included in purgewater determinations because effective treatment technology has not been demonstrated. Disposal to the soil is a less hazardous pathway to biota than storing tritium-contaminated water above ground, which would involve a larger airborne pathway. Table 1 to this agreement is a listing of the most restrictive of the applicable standards, which are the collection criteria for radionuclide's and chemical constituents.

3.1.2 Chemical analyses used to determine the presence and concentration of constituents for RCRA wells are those analytical techniques and detection limits used for RCRA groundwater monitoring, *Test Method for Evaluating Solid Waste--Physical/Chemical Methods*, SW-846, Rev. 3. Chemical analyses used to determine the presence and concentration of constituents for Past Practice investigations are defined in the approved Work Plan or approved pre-work plan document. To qualify as a contaminant, the concentration of the constituent must' be above naturally occurring levels. DOE-RL shall demonstrate groundwater constituent background levels, which shall be subject to approval by Ecology and EPA. No additional analyses, other than those normally used for monitoring purposes, will be conducted in order to determine the collection category of the purgewater.

3.1.3 DOE-RL will collect purgewater that contains radionuclides that exceed ten times (10X) MCLs for specific isotopes listed by the EPA. Tritium is excluded from collection.

3.1.4 Purgewater across the Hanford Site will be collected and stored for future treatment when the concentration of constituents exceeds collection criteria listed in Table 1.

3.1.5 Purgewater collection criteria for specific .constituents may be modified based on analytical detection levels, background concentrations, treatability, or other factors mutually acceptable to all parties to this agreement.

3.1.6 Purgewater collection criteria for the following chemical constituents will be the analytical detection limits as listed in EPA Method SW-846. Table 1 specifies EPA Method SW-846 collection criteria for these compounds because existing detection limits exceed CFWTL.

(i) DOE
(ii) DDT
(iii) Dieldrin
(iv) Dioxin
(v) Endrin
(vi) Heptachlor

(vii) Hexachlorobenzene
(viii) Isobutyl Alcohol
(ix) Parathion
(x) Silver
(xi) Toxaphene

3.1.7 Non-chemical contaminants and physical characteristics of purgewater (e.g., alkalinity, turbidity, color, total dissolved solids, and coliform bacteria) will not be used as collection criteria.

3.1.8 Collection criteria will be based upon filtered metal analyses. Unfiltered metal analyses may misrepresent constituent levels present in purgewater, which may be the result of sediment, wearing of drill bits, and oxidation residues on the well casings.

3.1.9 Because of historical DOE-RL requirements, groundwater monitoring sample analyses at Hanford are based on constituent lists that do not conform to chemical constituents listed in. the CFWTL. Therefore, chemical compounds with no history of analyses at Hanford will be removed from consideration as collection criteria (see Table 2). No additional analyses, other than those normally used for groundwater monitoring purposes, will be performed in order to determine the collection category of the purgewater.

3.1.10 DOE-RL will submit to Ecology and EPA a list of chemical constituents present in Hanford groundwater in excess of the 10X criteria by October 1, 1990. This list will be used to determine which wells will be excluded from the 10X collect\on criteria, based on their natural occurrence in the Hanford Site groundwater.

3.1.11 Assignment of wells into collection categories will be performed on the basis of existing groundwater analytical data. Where existing data are insufficient to assign a well to a collection category, the chemical and radiological composition of an adjacent well may be used as indicator wells to establish purgewater disposition. If adjacent wells are also inadequate (or do not exist) to determine disposition, approved indicator parameters will be identified and analyses performed that can be used to establish a collection category. Wherever possible, the analyses performed for determination of purgewater disposition will be limited. Indicator parameters and adjacent indicator wells will be agreed upon by all parties. RCRA or Past Practice Operable Unit Manager Meeting Minutes will be the approval record. Decisions involving the site-wide monitoring program will be made through representation of DOE-RL by the Safety and Environment Division (SED) in these meetings.

3.1.12 Because of the laterally extensive plume of carbon tetrachloride beneath the 200 West Area, all purgewater from 200 West Area, except for the expansion area will be collected and stored.

3.1.13 Table 4 lists wells requiring collection as determined by the data available in June 1990. This list will be subject to change as new data becomes available.

3.2 Management Practices

3.2.1 The collection criteria will be applicable to all wells on the Hanford Site.

3.2.2 Purgewater containing constituents in concentrations lower than the collection criteria can be discharged to the soil at or in the immediate vicinity of the wellhead when such wells do not monitor the following:

(i) Designated RCRA Solid Waste Management Units (SWMUs)
(ii) Burial grounds
(iii) Active/inactive liquid effluent disposal sites
(iv) Known surface or subsurface soil contamination areas

Purgewater from wells in the areas cited above will be taken to other areas on the site and discharged directly to the soil or to B-Pond.

3.2.3 Purgewater containing constituents in excess of the collection criteria will be collected and stored in ModuTanks™ located in the 600 area immediately east of the 200 East Area.

3.2.4 Based upon the list of major contaminants to be used for the collection and evaluation of purgewater, DOE-RL will identify a range of treatment and disposal options for purgewater collected pursuant to Paragraph 3.2.3 of this strategy. From these opt ions, DOE-RL will propose the preferred method, which will consider both the environmental protection offered and the cost effectiveness of the option. Ecology and the EPA will concur in the selection of the final treatment and disposal selection. DOE-RL agrees to resume aquifer pump testing as required in approved Past Practice Work Plans, RCRA Assessment, or Closure Plans. Nomination of wells for aquifer testing for these purposes will be made by DOE-RL and will be initially focused on existing wells having constituent concentrations less than the collection criteria. Final approval of wells to be used in aquifer testing for these purposes and disposition of the purgewater will be approved by Ecology and EPA.

3.3 Disposal Categories

3.3.1 Sample analyses from previous sampling events (usually quarterly) will be used to determine the disposal category for purgewater from wells in the monitoring mode.

3.3.2 Additional analyses to determine purgewater disposition will only be performed if the disposition of purgewater cannot be established through existing data or indicator wells adjacent to the well in question. If additional analysis is needed to determine disposition, approved indicator parameters, based on substances of concern in adjacent wells, or near related or adjacent facilities will be used to determine the need for collection.

3.4 Treatment

3.4.1 DOE-RL shall actively pursue treatment technology that will reduce concentrations of contaminants in radioactive liquid effluents rendering them acceptable for discharge to the environment liquid effluent treatment systems currently being designed for the Hanford Site will be evaluated for the inclusion of purgewater in the treatment 3.4.2 process. If it is determined to be technically feasible, treatment of purgewater collected under Paragraph 3.2.3 of this strategy will be conducted in accordance with terms and conditions specified in an applicable treatment facility liquid effluent disposal permit.

3.4.2 Purgewater requiring collection and storage in the ModuTanks in the 600 area will be treated prior to discharge to soil or surface waters on the Hanford Site.

3.5 Permitting Strategy

3.5.1 The regulatory implementation mechanism for this purgewater management strategy will be through inclusion as Appendix F to the Action Plan of the Hanford Federal Facility and Consent Order (Tri-Party Agreement). DOE-RL, Ecology and EPA also agree that requirements contained in the strategy will be included in the Hanford Site RCRA Permit issued by Ecology. The strategy will also be included by reference into past practice work plans. The site-wide monitoring network is maintained for compliance with DOE Order 5400.1; however, purgewater associated with this program will be managed under the terms of this strategy.

3.6 Regulatory Provisions

3.6.1 All purgewater requiring collection and storage will be managed in compliance with the provisions of applicable permits and consistent with RCRA and WAC regulations for the Treatment, Storage, and Disposal of hazardous/dangerous waste. However, no designation as to the specific source of the waste (i.e., listed waste) will apply.

3.6.2 In accordance with regulatory definition, purgewater is a dangerous waste when it exhibits the characteristics of dangerous waste (i.e., ignitability, corrosivity, reactivity, and extraction procedure toxicity), or as determined by designation or bioassay pursuant to the Washington State Administrative Code (WAC), Dangerous Waste Regulations, 173·303.

In signing this purgewater management strategy, Ecology agrees that purgewater management at Hanford is not subject to the groundwater listed waste designation procedures as set forth in WAC Chapter 173-303.

3.7 Special Circumstances

3.7.1 RCRA and CERCLA Unit Managers designated by the respective Tri-Party Agreement participants (DOE-RL, Ecology and EPA) and SED shall have authority to negotiate unique purgewater disposal criteria not specified in this ·strategy. Any negotiations conducted outside of the scope of this strategy will only be conducted for unusual situations where unique application of the existing strategy is impractical.

3.7.2 Prior to the implementation of any special purgewater management actions negotiated by Unit Managers or SED, they will prepare a jointly signed decision paper specifying the technical and regulatory justifications for their actions for submittal to the Tri-Party Agreement Project Managers for approval.

3.7.3 The provisions of this strategy shall be reviewed annually by the signatory parties or their designees for purposes of amending the document if it is deemed necessary. If there is a significant need by any of the signatory parties for revision at any time, the strategy may Ile revised and approved by them.

3.8

It is the express intent of all parties that full implementation of this strategy will occur by October 1, 1990. Until such time as this· purgewater management agreement is approved and signed by DOE-RL, Ecology, and EPA, DOE-RL will continue to manage purgewater as previously agreed to with Ecology and the EPA.

7/18/90
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1

Table 1 Collection Criteria

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis[1]
1,1,1,2-tetrachlorethane	10.0	50.0	PPB	PQL
1,1,1-trichloroethane	5.0	2000.0	PPB	MCL
1,1,2,2-tetrachloroethane	5.0	24000.0	PPB	CFWTL
1,1,2-trichloroethane	5.0	2000.0	PPB	MCL[2]
1,1-dichloroethane	5.0	10.0	PPB	PQL
1,1-dichloroethylene	10.0	70.0	PPB	MCL
1,2,3,4-tetrachlorobenzene	10.0	500.0	PPB	CFWTL
1,2,3,5-tetrachlorobenzene	10.0	500.0	PPB	CFWTL
1,2,3-trichlorobenzene	10.0	500.0	PPB	CFWTL
1,2,3-trichloropropane	10.0	50.0	PPB	PQL
1,2,4,5-tetrachlorobenzene	10.0	100.0	PPB	PQL
1,2,4-trichlorobenzene	10.0	100.0	PPB	PQL
1,2-dibromo-3-chloropropane	10.0	50.0	PPB	PQL
1,2-dibromoethane	10.0	50.0	PPB	PQL
1,2-dichlorobenzene	10.0	500.0	PPB	CFWTL
1,2-dichloroethane	5.0	50.0	PPB	MCL
1,2-dichloropropane	5.0	57000.0	PPB	CFWTL
1,3,5-trichlorobenzene	10.0	500.0	PPB	CFWTL
1,3-dichlorobenzene	10.0	500.0	PPB	CFWTL
1,3-dichloropropene	5.0	2440.0	PPB	CFWTL
1,4-dichloro-2-butene	10.0	50.0	PPB	PQL
1,4-naphthoquinone	10.0	100.0	PPB	PQL
1-naphthylamine	10.0	100.0	PPB	PQL
2,3,4,6-tetrachlorophenol	10.0	100.0	PPB	PQL
2,4,5-T	2.0	20.0	PPB	PQL
2,4,5-TP silvex	2.0	100.0	PPB	MCL
2,4,5-trichlorophenol	10.0	100.0	PPB	PQL
2,4,6-trichlorophenol	10.0	9700.0	PPB	CFWTL
2,4-D	2.0	1000.0	PPB	MCL
2,4-dichlorophenol	10.0	3650.0	PPB	CFWTL
2,4-dimethylphenol	10.0	50.0	PPB	PQL
2,4-dinitrophenol	10.0	500.0	PPB	PQL
2,4-dinitrotoluene	10.0	2300.0	PPB	CFWTL
2,6-dichlorophenol	10.0	100.0	PPB	PQL
2,6-dinitrotoluene	10.0	2300.0	PPB	CFWTL
2-Hexanone	50.0	500.0	PPB	PQL
2-Methylnaphthalene	10.0	100.0	PPB	PQL
2-acetylaminofluorene	10.0	100.0	PPB	PQL
2-chloronaphthalene	10.0	100.0	PPB	PQL

2

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis[1]
2-chlorophenol	10.0	20000.0	PPB	CFWTL
2-naphthylamine	10.0	100.0	PPB	PQL
2-picoline	10.0	50.0	PPB	PQL
3,3'-dichlorobenzidine	10.0	200.0	PPB	PQL
3,3'-dimethylbenzidine	10.0	100.0	PPB	PQL
3-methylcholanthrene	10.0	100.0	PPB	PQL
4,6-dinitro-o-cresol and salts	10.0	500.0	PPB	PQL
4-Nitroquinoline 1-oxide	10.0	100.0	PPB	PQL
4-aminobyphenyl	10.0	100.0	PPB	PQL
4-bromophenyl phenyl ether	10.0	100.0	PPB	PQL
5-nitro-o-toluidine	10.0	100.0	PPB	PQL
7,12-dimethylbenz[a]anthracene	10.0	100.0	PPB	PQL
Acenaphthalene	10.0	100.0	PPB	PQL
Acenapthene	10.0	5200.0	PPB	CFWTL
Acetone	10.0	1000.0	PPB	PQL
Acetonitrile	10.0	1000.0	PPB	PQL
Acetophenone	10.0	100.0	PPB	PQL
Acrolein	10.0	210.0	PPB	CFWTL
Acrylonitrile	10.0	26000.0	PPB	CFWTL
Aldrin	.1	.5	PPB	PQL
Allyl Chloride	100.0	100.0	PPB	PQL[3]
Alpha,alpha-dimethylphenethyla	10.0	100.0	PPB	PQL
Alpha-BHC	.1	.5	PPB	PQL
Aniline	10.0	100.0	PPB	PQL
Anthracene	10.0	100.0	PPB	PQL
Antimony, filtered	100.0	16000.0	PPB	CFWTL
Antimony-125	48.0	3000.0	pCi/L	MCL
Aramite	10.0	100.0	PPB	CFWTL
Arochlor 1016	1.0	1.0	PPB	CFWTL[3]
Arochlor 1221	1.0	1.0	PPB	CFWTL[3]
Arochlor 1232	1.0	1.0	PPB	CFWTL[3]
Arochlor 1242	1.0	1.0	PPB	CFWTL[3]
Arochlor 1248	1.0	1.0	PPB	CFWTL[3]
Arochlor 1254	1.0	1.0	PPB	CFWTL[3]
Arochlor 1260	1.0	1.0	PPB	CFWTL[3]
Arsenic, filtered	5.0	480.0	PPB	CFWTL
Barium, filtered	6.0	10000.0	PPB	MCL
Benz[a]anthracene	10.0	100.0	PPB	PQL
Benzene	5.0	50.0	PPB	MCL
Benzo(ghi)perylene	10.0	100.0	PPB	PQL

1

2

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis[1]
Benzo(k)fluoranthene	10.0	100.0	PPB	PQL
Benzo[a]pyrene	10.0	190.0	PPB	PQL
Benzo[b]fluoranthene	10.0	100.0	PPB	PQL
Benzyl Alcohol	10.0	200.0	PPB	PQL
Beryllium, filtered	5.0	53.0	PPB	CFWTL
Beta-BHC	.1	.5	PPB	PQL
Bis(1-chloro-1-methylethyl)ether	10.0	100.0	PPB	PQL
Bis(2-chloroethoxy) methane	10.0	100.0	PPB	PQL
Bis(2-chloroethyl) ether	10.0	100.0	PPB	PQL
Bis(chloromethyl)ether	5.0	100.0	PPB	PQL
Bromodichloromethane	5.0	10.0	PPB	PQL
Bromoform	5.0	20.0	PPB	PQL
Cadmium, filtered	2.0	11.0	PPB	CFWTL
Carbon disulfide	10.0	50.0	PPB	PQL
Carbon tetrachloride	5.0	50.0	PPB	MCL
Carbon-14	20.0	20000.0	pCi/L	MCL
Cesium-137	20.0	2000.0	pCi/L	MCL
Chlordane	1.0	1.0	PPB	CFWTL[3]
Chloride	500.0	2500000.0	PPB	MCL
Chlorobenzene	5.0	20.0	PPB	PQL
Chlorobenzene (by ABN)	10.0	20.0	PPB	PQL
Chlorobenzilate	300.0	300.0	PPB	PQL[3]
Chloroethane	10.0	50.0	PPB	PQL
Chloroform	5.0	1000.0	PPB	MCL
Chromium(VI)	50.0	110.0	PPB	CFWTL
Chromium, filtered	10.0	110.0	PPB	CFWTL[4]
Chrysene	10.0	100.0	PPB	PQL
Cobalt-60	22.5	1000.0	pCi/L	MCL
Copper, filtered	10.0	120.0	PPB	CFWTL
Cresols	10.0	100.0	PPB	PQL
Cyanide	10.0	52.0	PPB	CFWTL
DDD	.1	1.0	PPB	PQL
DDE	.1	0.5	PPB	PQL
DDT	.1	.1	PPB	CFWTL[3]
Delta-BHC	.1	1.0	PPB	PQL
Di-n-propylnitrosamine	10.0	100.0	PPB	PQL
Dibenz[a,h]anthracene	10.0	100.0	PPB	PQL
Dibenzofuran	10.0	100.0	PPB	PQL
Dibromochloromethane	5.0	10.0	PPB	PQL
Dichlorodifluoromethane	10.0	50.0	PPB	PQL

1

2

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis[1]
Dieldrin	.1	.1	PPB	CFWTL[3]
Dillate	10.0	100.0	PPB	PQL
Dimethoate	2.0	100.0	PPB	PQL
Dinitrobenzene	10.0	100.0	PPB	PQL
Dinoseb	10.0	10.0	PPB	PQL
Dioxane	500.0	1500.0	PPB	PQL
Dioxin	.1	.1	PPB	CFWTL[3]
Diphenylamine	10.0	100.0	PPB	PQL
Disulfoton	2.0	20.0	PPB	PQL
Endosulfan I	.1	.6	PPB	CFWTL
Endrin	.1	.1	PPB	CFWTL[3]
Ethyl benzene	5.0	20.0	PPB	PQL
Ethyl methacrylate	10.0	50.0	PPB	PQL
Ethyl methanesulfonate	10.0	100.0	PPB	PQL
Fluoranthene	10.0	100.0	PPB	PQL
Fluorene	10.0	100.0	PPB	PQL
Fluoride	500.0	20000.0	PPB	MCL
Gross alpha	4.0	150.0	pCi/L	MCL
Gross beta	8.0	500.0	pCi/L	MCL
Heptachlor	.1	.1	PPB	CFWTL[3]
Heptchlor epoxide	.1	10.0	PPB	PQL
Hexachlorobenzene	10.0	10.0	PPB	PQL[3]
Hexachlorobutadiene	10.0	93.0	PPB	CFWTL
Hexachlorocyclopentadiene	10.0	52.0	PPB	CFWTL
Hexachloroethane	10.0	5400.0	PPB	CFWTL
Hexachlorophene	10.0	100.0	PPB	PQL
Hexachloropropene	10.0	100.0	PPB	PQL
Hydrogen sulfide	10.0	20.0	PPB	CFWTL
Indeno(1,2,3-cd)pyrene	10.0	100.0	PPB	PQL
Iodine-129	1.0	10.0	pCi/L	MCL
Iodine-131	20.0	30.0	pCi/L	MCL
Iodomethane	10.0	50.0	PPB	PQL
Iron, filtered	30.0	3000.0	PPB	MCL
Isobutyl Alcohol	10000.0	10000.0	PPB	PQL[3]
Isodrin	10.0	100.0	PPB	PQL
Isophorone	10.0	100.0	PPB	PQL
Isosafrole	10.0	100.0	PPB	PQL
Kepone	1.0	100.0	PPB	PQL
Lead, filtered	5.0	32.0	PPB	CFWTL
Lindane, gamma-BHC	.1	.8	PPB	CFWTL

1
2

1

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis[1]
Manganese, filtered	5.0	500.0	PPB	MCL
Mercury, filtered	.1	.1	PPB	CFWTL
Methacrylonitrile	10.0	50.0	PPB	PQL
Methapyrilene	10.0	100.0	PPB	PQL
Methoxychlor	3.0	3.0	PPB	CFWTL[3]
Methyl bromide	10.0	100.0	PPB	PQL
Methyl chloride	10.0	10.0	PPB	PQL
Methyl ethyl ketone	10.0	100.0	PPB	PQL
Methyl isobutyl ketone	10.0	50.0	PPB	PQL
Methyl methacrylate	10.0	20.0	PPB	PQL
Methyl methanesulfonate	10.0	100.0	PPB	PQL
Methyl parathion	2.0	5.0	PPB	PQL
N-Nitrosodiphenylamine	10.0	100.0	PPB	PQL
N-nitrosodi-n-butylamine	10.0	100.0	PPB	PQL
N-nitrosodiethylamine	10.0	100.0	PPB	PQL
N-nitrosodimethylamine	10.0	100.0	PPB	PQL
N-nitrosomethylethylamine	10.0	100.0	PPB	PQL
N-nitrosomorpholine	10.0	100.0	PPB	PQL
N-nitrosopiperidine	10.0	100.0	PPB	PQL
Naphthalene	10.0	6200.0	PPB	CFWTL
Nickel, filtered	10.0	1600.0	PPB	CFWTL
Nickel-63	10.0	500.0	pCi/L	MCL
Nitrate	500.0	450000.0	PPB	MCL
Nitrobenzine	10.0	100.0	PPB	PQL
Nitrosopyrrolidine	10.0	100.0	PPB	PQL
O,O,O-triethyl phosphorothioate	10.0	100.0	PPB	PQL
O-toluidine hydrochloride	10.0	100.0	PPB	PQL
P-chloro-m-cresol	10.0	50.0	PPB	PQL
P-chloroaniline	10.0	200.0	PPB	PQL
P-dimethylaminoazobenzene	10.0	100.0	PPB	PQL
P-nitroaniline	10.0	500.0	PPB	PQL
Parathion	2.0	2.0	PPB	CFWTL[3]
Pcdd's	.0	.1	PPB	PQL
Pcdf's	.0	.1	PPB	PQL
Pentachlorobenzene	10.0	100.0	PPB	PQL
Pentachloroethane	10.0	11000.0	PPB	CFWTL
Pentachloronitrobenzene	10.0	100.0	PPB	PQL
Pentachlorophenol	50.0	130.0	PPB	CFWTL
Phenacetin	10.0	100.0	PPB	PQL
Phenanthrene	10.0	100.0	PPB	PQL

2

3

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis[1]
Phenol	10.0	25600.0	PPB	CFWTL
Phenylenediamine	10.0	100.0	PPB	PQL
Phorate	2.0	20.0	PPB	PQL
Phthalic acid esters	10.0	30.0	PPB	CFWTL
Plutonium-238	.1	16.0	pCi/L	DCG
Plutonium-239,40	.1	12.0	pCi/L	DCG
Pronamide	10.0	100.0	PPB	PQL
Propionitrile	5.0	50.0	PPB	PQL
Pyrene	10.0	100.0	PPB	PQL
Pyridine	500.0	500.0	PPB	PQL
Radium	1.0	50.0	pCi/L	MCL
Ruthenium-103	20.0	2000.0	PPB	MCL
Ruthenium-106	172.5	300.0	pCi/L	MCL
Safrol	10.0	100.0	PPB	PQL
Selenium	5.0	100.0	PPB	MCL
Silver, filtered	10.0	10.0	PPB	CFWTL[3]
Strontium-89	5.0	200.0	pCi/L	MCL
Strontium-90	5.0	80.0	pCi/L	MCL
Styrene	5.0	10.0	PPB	PQL
Sulfate	500.0	2500000.0	PPB	MCL
Sym-trinitrobenzene	10.0	100.0	PPB	PQL
Technetium-99	15.0	9000.0	pCi/L	MCL
Tetrachloroethylene	5.0	8400.0	PPB	CFWTL
Tetraethylpyrophosphate	2.0	100.0	PPB	PQL
Thallium	5.0	400.0	PPB	CFWTL
Tin, filtered	30.0	80000.0	PPB	PQL
Toluene	5.0	20.0	PPB	PQL
Toxaphene	1.0	1.0	PPB	CFWTL[3]
Trans-1,2-dichloroethylene	5.0	10.0	PPB	PQL
Trichloroethylene	5.0	50.0	PPB	MCL
Trichloromonofluoromethane	10.0	50.0	PPB	PQL
Uranium	.5	400.0	pCi/L	DCG
Uranium, chemical	.7	590.0	UG/L	DCG
Vanadium, filtered	5.0	400.0	PPB	PQL
Vinyl Acetate	5.0	50.0	PPB	PQL
Vinyl chloride	10.0	20.0	PPB	MCL
Xylene-m	5.0	50.0	PPB	PQL
Xylene-o,p	5.0	50.0	PPB	PQL
Zinc, filtered	5.0	1100.0	PPB	CFWTL

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Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis[1]
m-Nitroaniline	10.0	500.0	PPB	PQL
o-Nitroaniline	10.0	500.0	PPB	PQL
p-Dichlorobenzene	10.0	500.0	PPB	PQL
p-Nitrophenol	10.0	1500.0	PPB	CFWTL

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1 The basis for collection criteria are as follows:

MCL - 10X the Maximum Contaminant Level as defined in 40 CFR 141, 40 CFR 143, and EPA 570/9-76-003
PQL - 10X the Practical Quantitation Limit as listed in Appendix IX of 40 CFR 264
CFWTL - 10X the Chronic Freshwater Toxicity Level as defined in EPA 440/5-86-001
DCG - 10X one-twenty-fifth of the Derived Concentration Guide as listed in DOE Order 5400.5

2 Based on 10X MCL for 1,1,1-trichloroethane.

3 Criterion is below current detection limit so detection limit is used as criterion.

4 All chromium is assumed to be hexavalent.

1 **Table 2 Constituents Not Analyzed**

Table 2. Constituents Not Analyzed
for at Hanford but Listed in the CFWTL

2-chlorophenyl phenyl
Methylene bromide
Chlorine
Chloroprene
Chlorpyrifos
Chromium (tri)
Demeton
Entrin aldehyde
Gamphur
Guthion
Malathion
Mirex
Thionazin

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1 **Table 3 Constituents that are Found in at Least One Well Above the Collection Criteria**
2 **Established in the Strategy**

Table 3. Constituents That Are Found In At Least One Well Above The Collection Criteria Established In This Strategy.

Constituent	Units	Detn. Limit	Collection Criteria
Gross beta	pCi/L	8.00	500.0
Strontium-90	pCi/L	5.00	80.0
Carbon Tetrachloride	PPB	5.00	50.0
Natural uranium	UG/L		590.0
Uranium	pCi/L	.10	400.0
Nitrate	PPB	500.00	450000.0
Gross alpha	pCi/L	4.00	150.0
Iodine-129	pCi/L	1.00	10.0
Chromium	PPB	10.00	110.0
Cyanide	PPB	10.00	52.0
Plutonium-239/40	pCi/L	.10	12.0
Toluene	PPB	5.00	20.0
Trans-1,2-dichloroethene	PPB	5.00	10.0
Manganese	PPB	5.00	500.0
Mercury	PPB	.10	.1
Chloroform	PPB	5.00	1000.0

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Table 4 List of Wells Requiring Purgewater Containment Based on the Most Recent Sampling for the Constituent Listed in Table 1, Collection Criteria of WHC Purgewater Strategy Document

Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
1-D2-5	H22 FCHROMI ppb	110	01MAR90	120	Chromium, filtered
1-D5-12	H22 FCHROMI ppb	110	06MAR90	464	Chromium, filtered
1-D8-3	H22 FCHROMI ppb	110	01MAR90	146	Chromium, filtered
1-F5-3	111 BETA pCi/L	500	28FEB90	533	Gross beta
	121 SR-90 pCi/L	80	17OCT89	244	Strontium-90
1-F8-1	212 ALPHA pCi/L	150	13OCT87	219	Gross alpha
1-H4-3	H22 FCHROMI ppb	110	23APR90	141	Chromium, filtered
1-H4-7	H22 FCHROMI ppb	110	23APR90	136	Chromium, filtered
1-H4-11	H22 FCHROMI ppb	110	23APR90	142	Chromium, filtered
1-H4-12C	H22 FCHROMI ppb	110	17APR90	283	Chromium, filtered
1-H4-14	H22 FCHROMI ppb	110	25APR90	358	Chromium, filtered
1-H4-15A	H22 FCHROMI ppb	110	18APR90	114	Chromium, filtered
1-H4-18	H22 FCHROMI ppb	110	20APR90	126	Chromium, filtered
1-K-20	H22 FCHROMI ppb	110	01MAR90	156	Chromium, filtered

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Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code			Action Level	Collection Date	Analytical Value	Constituent
1-K-22	H22	FCHROMI	ppb	110	02MAR90	157	Chromium, filtered
1-N-2	111	BETA	pCi/L	500	02FEB90	3320	Gross beta
	121	SR-90	pCi/L	80	02FEB90	1960	Strontium-90
1-N-3	111	BETA	pCi/L	500	14FEB90	680	Gross beta
	121	SR-90	pCi/L	80	14FEB90	607	Strontium-90
1-N-5	111	BETA	pCi/L	500	15JUN89	665	Gross beta
	121	SR-90	pCi/L	80	15JUN89	492	Strontium-90
1-N-7	038	I-131	pCi/L	30	16JAN87	309	Iodine-131
1-N-14	111	BETA	pCi/L	500	01FEB90	2100	Gross beta
	121	SR-90	pCi/L	80	01FEB90	987	Strontium-90
1-N-16	H31	FIRON	ppb	3000	01FEB90	3590	Iron, filtered
	H29	FMANGAN	ppb	500	01FEB90	2050	Manganese, filtered
1-N-17	H29	FMANGAN	ppb	500	01FEB90	610	Manganese, filtered
	121	SR-90	pCi/L	80	10NOV89	111	Strontium-90
1-N-18	111	BETA	pCi/L	500	20JUN89	1200	Gross beta
	121	SR-90	pCi/L	80	20JUN89	415	Strontium-90

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Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code		Action Level	Collection Date	Analytical Value	Constituent
1-N-27	111 BETA	pCi/L	500	08FEB90	574	Gross beta
	121 SR-90	pCi/L	80	08FEB90	283	Strontium-90
1-N-28	038 I-131	pCi/L	30	14JAN87	28600	Iodine-131
1-N-29	111 BETA	pCi/L	500	07FEB90	2020	Gross beta
	038 I-131	pCi/L	30	16JAN87	14100	Iodine-131
	121 SR-90	pCi/L	80	07FEB90	1280	Strontium-90
1-N-30	038 I-131	pCi/L	30	14JAN87	687	Iodine-131
1-N-32	038 I-131	pCi/L	30	16JAN87	4830	Iodine-131
1-N-33	038 I-131	pCi/L	30	16JAN87	8500	Iodine-131
	121 SR-90	pCi/L	80	05FEB90	197	Strontium-90
1-N-36	038 I-131	pCi/L	30	16JAN87	11200	Iodine-131
	121 SR-90	pCi/L	80	01DEC89	224	Strontium-90
1-N-37	038 I-131	pCi/L	30	16JAN87	4380	Iodine-131
1-N-39	111 BETA	pCi/L	500	15MAY90	851	Gross beta
	038 I-131	pCi/L	30	16JAN87	5310	Iodine-131
	121 SR-90	pCi/L	80	21DEC89	454	Strontium-90

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Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code			Action Level	Collection Date	Analytical Value	Constituent
1-N-45	111	BETA	pCi/L	500	01DEC88	2480	Gross beta
	038	I-131	pCi/L	30	16JAN87	3760	Iodine-131
	121	SR-90	pCi/L	80	01DEC88	1130	Strontium-90
1-N-54	121	SR-90	pCi/L	80	01NOV89	171	Strontium-90
1-N-56	111	BETA	pCi/L	500	01NOV89	691	Gross beta
	121	SR-90	pCi/L	80	01NOV89	364	Strontium-90
1-N-67	111	BETA	pCi/L	500	05FEB90	16500	Gross beta
	121	SR-90	pCi/L	80	05FEB90	8980	Strontium-90
2-E17-1	081	I-129	pCi/L	10	10AUG87	47.3	Iodine-129
2-E17-5	081	I-129	pCi/L	10	16MAY89	13.2	Iodine-129
2-E17-8	081	I-129	pCi/L	10	02SEP87	29.2	Iodine-129
2-E17-9	081	I-129	pCi/L	10	16MAY89	16	Iodine-129
2-E17-13	081	I-129	pCi/L	10	02DEC87	10.1	Iodine-129
2-E17-14	081	I-129	pCi/L	10	15MAY89	14	Iodine-129
2-E17-15	081	I-129	pCi/L	10	21DEC88	12.7	Iodine-129

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Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
2-E23-1	A66 TOLUENE ppb	20	19MAR90	30	Toluene
2-E24-1	081 I-129 pCi/L	10	13JUL87	44.6	Iodine-129
	281 I-129DW pCi/L	10	11MAY88	26.6	Iodine-129 (for drinking water regs)
2-E24-11	C72 NITRATE ppb	450000	12APR87	470000	Nitrate
2-E27-15	H38 FMERCUR ppb	0.12	26FEB90	0.23	Mercury, filtered
2-E28-23	111 BETA pCi/L	500	23MAR90	12900	Gross beta
	100 PU39-40 pCi/L	12	23MAR90	21.7	Plutonium-239,240
	121 SR-90 pCi/L	80	23MAR90	5240	Strontium-90
2-E28-24	112 ALPHAHI pCi/L	150	06APR90	1250	Gross alpha, high DL
	100 PU39-40 pCi/L	12	06APR90	144	Plutonium-239,240
	121 SR-90 pCi/L	80	06APR90	328	Strontium-90
2-E28-25	111 BETA pCi/L	500	23MAR90	12000	Gross beta
	100 PU39-40 pCi/L	12	23MAR90	19.3	Plutonium-239,240
	121 SR-90 pCi/L	80	23MAR90	6200	Strontium-90
2-E33-3	H38 FMERCUR ppb	0.12	23MAR88	0.17	Mercury, filtered
2-W6-1	A61 TETRANE ppb	50	10JUN87	220	Tetrachloromethane [Carbon Tetrachloride

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Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
2-W6-2	A61 TETRANE ppb	50	10MAY90	102	Tetrachloromethane [Carbon Tetrachlorid
2-W7-4	A61 TETRANE ppb	50	08MAY90	158	Tetrachloromethane [Carbon Tetrachlorid
2-W10-1	H65 HNITRAT ppb	450000	28JUL88	456000	Nitrate, high DL
2-W10-3	H65 HNITRAT ppb	450000	28JUL88	661000	Nitrate, high DL
2-W10-4	A61 TETRANE ppb	50	01DEC88	2800	Tetrachloromethane [Carbon Tetrachlorid
2-W10-9	H22 FCHROMI ppb	110	28FEB90	135	Chromium, filtered
	A61 TETRANE ppb	50	23AUG88	2300	Tetrachloromethane [Carbon Tetrachlorid
2-W11-7	A61 TETRANE ppb	50	10NOV88	2500	Tetrachloromethane [Carbon Tetrachlorid
2-W11-14	212 ALPHA pCi/L	150	09MAR89	173	Gross alpha
	112 ALPHAHI pCi/L	150	13APR90	207	Gross alpha, high DL
	A61 TETRANE ppb	50	13APR90	790	Tetrachloromethane [Carbon Tetrachlorid
2-W11-23	H65 HNITRAT ppb	450000	21SEP88	757000	Nitrate, high DL
2-W14-2	C70 CYANIDE ppb	52	10NOV88	69	Cyanide
	A61 TETRANE ppb	50	10NOV88	920	Tetrachloromethane [Carbon Tetrachlorid
2-W14-5	A61 TETRANE ppb	50	10NOV88	860	Tetrachloromethane [Carbon Tetrachlorid

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Table 4. List of Wells Requiring Purge Water Containment
Based on the Most Recent Sampling for The Constituent Listed
in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
2-W14-6	A61 TETRANE ppb	50	10NOV88	320	Tetrachloromethane [Carbon Tetrachloride]
2-W15-4	H65 HNITRAT ppb	450000	26SEP88	699000	Nitrate, high DL
	C72 NITRATE ppb	450000	29NOV88	662000	Nitrate
	A61 TETRANE ppb	50	29NOV88	1830	Tetrachloromethane [Carbon Tetrachloride]
2-W15-7	A61 TETRANE ppb	50	29NOV88	2390	Tetrachloromethane [Carbon Tetrachloride]
2-W15-8	112 ALPHAHI pCi/L	150	07MAY90	226	Gross alpha, high DL
	A80 CHLFORM ppb	1000	07MAY90	154	Chloroform [Trichloromethane]
	A61 TETRANE ppb	50	07MAY90	1110	Tetrachloromethane [Carbon Tetrachloride]
2-W15-10	A61 TETRANE ppb	50	29NOV88	3750	Tetrachloromethane [Carbon Tetrachloride]
2-W15-11	A61 TETRANE ppb	50	29NOV88	4350	Tetrachloromethane [Carbon Tetrachloride]
2-W15-12	A61 TETRANE ppb	50	05JUN89	1920	Tetrachloromethane [Carbon Tetrachloride]
2-W15-15	A61 TETRANE ppb	50	13MAR90	800	Tetrachloromethane [Carbon Tetrachloride]
2-W15-16	A61 TETRANE ppb	50	03APR90	8400	Tetrachloromethane [Carbon Tetrachloride]
2-W15-18	A61 TETRANE ppb	50	16MAR90	1700	Tetrachloromethane [Carbon Tetrachloride]
2-W15-19	A61 TETRANE ppb	50	04MAY90	710	Tetrachloromethane [Carbon Tetrachloride]

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Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
2-W15-20	A61 TETRANE ppb	50	04MAY90	192	Tetrachloromethane [Carbon Tetrachloride]
2-W15-24	A61 TETRANE ppb	50	13MAR90	380	Tetrachloromethane [Carbon Tetrachloride]
2-W18-4	A61 TETRANE ppb	50	06JUN89	194	Tetrachloromethane [Carbon Tetrachloride]
2-W18-5	A61 TETRANE ppb	50	30NOV88	3640	Tetrachloromethane [Carbon Tetrachloride]
2-W18-9	A61 TETRANE ppb	50	03MAY90	121	Tetrachloromethane [Carbon Tetrachloride]
2-W18-15	A61 TETRANE ppb	50	01DEC88	89	Tetrachloromethane [Carbon Tetrachloride]
2-W18-17	A61 TETRANE ppb	50	20APR90	2000	Tetrachloromethane [Carbon Tetrachloride]
2-W18-21	A61 TETRANE ppb	50	13MAR90	180	Tetrachloromethane [Carbon Tetrachloride]
2-W18-23	A61 TETRANE ppb	50	11MAY90	675	Tetrachloromethane [Carbon Tetrachloride]
2-W18-24	A61 TETRANE ppb	50	03APR90	600	Tetrachloromethane [Carbon Tetrachloride]
2-W18-26	A61 TETRANE ppb	50	04MAY90	250	Tetrachloromethane [Carbon Tetrachloride]
2-W19-3	212 ALPHA pCi/L	150	13JAN89	1840	Gross alpha
	112 ALPHAHI pCi/L	150	04APR90	1360	Gross alpha, high DL
	081 I-129 pCi/L	10	20AUG87	32.9	Iodine-129
	A61 TETRANE ppb	50	02DEC88	120	Tetrachloromethane [Carbon Tetrachloride]

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Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code			Action Level	Collection Date	Analytical Value	Constituent
2-W19-3	104	U	pCi/L	420	04APR90	737	Uranium
	124	U-CHEM	ug/L	600	10MAR89	2000	Uranium, chemical
2-W19-9	212	ALPHA	pCi/L	150	13FEB89	998	Gross alpha
	081	I-129	pCi/L	10	20AUG87	21.4	Iodine-129
	A61	TETRANE	ppb	50	15DEC88	112	Tetrachloromethane [Carbon Tetrachloride]
	124	U-CHEM	ug/L	600	13FEB89	1400	Uranium, chemical
2-W19-11	212	ALPHA	pCi/L	150	21MAR88	1930	Gross alpha
	112	ALPHAHI	pCi/L	150	02APR90	867	Gross alpha, high DL
	081	I-129	pCi/L	10	20AUG87	31.6	Iodine-129
	A61	TETRANE	ppb	50	18JAN88	115	Tetrachloromethane [Carbon Tetrachloride]
	104	U	pCi/L	420	02APR90	1030	Uranium
	124	U-CHEM	ug/L	600	21MAR88	2610	Uranium, chemical
2-W19-15	A61	TETRANE	ppb	50	04APR90	127	Tetrachloromethane [Carbon Tetrachloride
2-W19-16	212	ALPHA	pCi/L	150	13FEB89	641	Gross alpha
	112	ALPHAHI	pCi/L	150	28MAR90	449	Gross alpha, high DL
	A61	TETRANE	ppb	50	28MAR90	193	Tetrachloromethane [Carbon Tetrachloride]
	104	U	pCi/L	420	28MAR90	478	Uranium
	124	U-CHEM	ug/L	600	13FEB89	641	Uranium, chemical

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Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
2-W19-18	212 ALPHA pCi/L	150	13JAN89	2000	Gross alpha
	112 ALPHAHI pCi/L	150	28MAR90	1280	Gross alpha, high DL
	A61 TETRANE ppb	50	28MAR90	89	Tetrachloromethane [Carbon Tetrachloride]
	104 U pCi/L	420	28MAR90	1130	Uranium
	124 U-CHEM ug/L	600	06OCT89	1880	Uranium, chemical
2-W19-19	212 ALPHA pCi/L	150	12JAN89	285	Gross alpha
	112 ALPHAHI pCi/L	150	04APR90	268	Gross alpha, high DL
	111 BETA pCi/L	500	04APR90	1090	Gross beta
	H65 HNITRAT ppb	450000	06OCT89	1340000	Nitrate, high DL
	C72 NITRATE ppb	450000	04APR90	1250000	Nitrate
	197 TC-99 pCi/L	9000	06OCT89	24600	Technetium-99
	104 U pCi/L	420	31OCT89	547	Uranium
	124 U-CHEM ug/L	600	06OCT89	638	Uranium, chemical
2-W19-20	212 ALPHA pCi/L	150	11JAN89	213	Gross alpha
	112 ALPHAHI pCi/L	150	20MAR90	214	Gross alpha, high DL
	111 BETA pCi/L	500	20MAR90	1830	Gross beta
	H65 HNITRAT ppb	450000	05OCT89	1110000	Nitrate, high DL
	C72 NITRATE ppb	450000	20MAR90	1050000	Nitrate
	197 TC-99 pCi/L	9000	05OCT89	25400	Technetium-99

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Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
2-W19-23	H65 HNITRAT ppb	450000	05OCT89	490000	Nitrate, high DL
	C72 NITRATE ppb	450000	20MAR90	586000	Nitrate
2-W19-24	212 ALPHA pCi/L	150	12JAN89	273	Gross alpha
	112 ALPHAHI pCi/L	150	20MAR90	254	Gross alpha, high
	111 BETA pCi/L	500	20MAR90	2740	Gross beta
	H65 HNITRAT ppb	450000	06OCT89	1040000	Nitrate, high DL
	C72 NITRATE ppb	450000	20MAR90	584000	Nitrate
	197 TC-99 pCi/L	9000	06OCT89	41000	Technetium-99
2-W19-25	212 ALPHA pCi/L	150	12JAN89	183	Gross alpha
	112 ALPHAHI pCi/L	150	20MAR90	197	Gross alpha, high
	111 BETA pCi/L	500	20MAR90	2160	Gross beta
	H65 HNITRAT ppb	450000	05OCT89	960000	Nitrate, high DL
	C72 NITRATE ppb	450000	20MAR90	931000	Nitrate
	197 TC-99 pCi/L	9000	05OCT89	33000	Technetium-99
2-W19-26	212 ALPHA pCi/L	150	01NOV88	300	Gross alpha
	H65 HNITRAT ppb	450000	05OCT89	1360000	Nitrate, high DL
	C72 NITRATE ppb	450000	27OCT89	1300000	Nitrate

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Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
2-W22-9	281 I-129DW pCi/L	10	27SEP88	23.9	Iodine-129 (for drinking water regs)
2-W22-20	H22 FCHROMI ppb	110	21FEB90	301	Chromium, filtered
2-W23-7	H38 FMERCUR ppb	0.12	09JUN87	0.16	Mercury, filtered
3-1-16B	A91 TRANDCE ppb	10	18DEC89	135	trans-1,2-Dichloroethene
3-1-17A	112 ALPHAHI pCi/L	150	22MAY90	159	Gross alpha, high DL
6-35-70	081 I-129 pCi/L	10	09JUL87	47.2	Iodine-129
	281 I-129DW pCi/L	10	15FEB90	10.7	Iodine-129 (for drinking water regs)
6-37-43	081 I-129 pCi/L	10	10SEP87	10.712	Iodine-129
6-38-70	A61 TETRANE ppb	50	06APR90	58	Tetrachloromethane [Carbon Tetrachloride]
6-39-79	A61 TETRANE ppb	50	23FEB89	820	Tetrachloromethane [Carbon Tetrachloride]
6-49-55A	C70 CYANIDE ppb	52	27APR90	84.9	Cyanide
6-50-53	111 BETA pCi/L	500	28APR89	1440	Gross beta
	C70 CYANIDE ppb	52	17JAN89	641	Cyanide
	H65 HNITRAT ppb	450000	28APR89	596000	Nitrate, high DL
	C72 NITRATE ppb	450000	17JAN89	625000	Nitrate

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Table 4. List of Wells Requiring Purge Water Containment
Based on the Most Recent Sampling for The Constituent Listed
in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
6-53-47B	121 SR-90 pCi/L	80	26MAR90	113	Strontium-90
6-53-48A	121 SR-90 pCi/L	80	19APR89	124	Strontium-90
6-53-48B	121 SR-90 pCi/L	80	19APR89	240	Strontium-90
6-54-48	121 SR-90 pCi/L	80	26MAR90	126	Strontium-90
6-97-43	H22 FCHROMI ppb	110	16JAN89	192	Chromium, filtered
6-97-51A	H22 FCHROMI ppb	110	31AUG88	112	Chromium, filtered

113 Total Wells Require Purgewater Containment

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242-A Evaporator

Change Control Log

Change Control Logs ensure that changes to this unit are performed in a methodical, controlled, coordinated and transparent manner. Each unit addendum will have a "**Last Modification Date**" which represents the last date the portion of the unit has been modified. The "**Modification Number**" represents Ecology's method for tracking the different versions of the permit. This log will serve as an up to date record of modifications and version history of the unit.

Last modification to 242-A Evaporator **December 31, 2014**

Chapters	Last Modification Date	Modification Number
Conditions	12/31/2014	
1.0 Part A Form	03/31/2014	
2.0 Reserved		
3.0 Waste Analysis Plan	03/31/2014	
4.0 Process Information	09/30/2013	
4.B Integrity Assessment	12/31/2002	
5.0 Reserved		
6.0 Procedures to Prevent Hazards	12/31/2014	
7.0 Contingency Plan	12/31/2014	
8.0 Personnel Training	09/30/2013	
9.0 Reserved		
10.0 Reserved		
11.0 Closure Plan	09/30/2013	

OPERATING UNIT 4 UNIT-SPECIFIC CONDITIONS
242-A EVAPORATOR

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OPERATING UNIT 4 UNIT-SPECIFIC CONDITIONS
242-A EVAPORATOR

UNIT DESCRIPTION

The 242-A Evaporator is a mixed waste treatment and storage unit consisting of a conventional forced-circulation, vacuum evaporation system to concentrate mixed-waste solutions located in the 200 East Area.

This document sets forth the operating conditions for the 242-A Evaporator.

III.4.A COMPLIANCE WITH UNIT SPECIFIC PERMIT CONDITIONS

The Permittees shall comply with all requirements set forth in the Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit (Permit) as specified in Permit Attachment 9, Permit Applicability Matrix, including all approved modifications. All chapters, subsections, figures, tables, and appendices included in the following unit-specific Permit Conditions are enforceable in their entirety.

In the event that the Part III-Unit-Specific Conditions for Operating Unit 4, 242-A Evaporator conflict with the Part I-Standard Conditions and/or Part II-General Facility Conditions of the Permit, the unit-specific conditions for Operating Unit 4, 242-A Evaporator prevail.

CHAPTERS SPECIFIC TO OPERATING UNIT GROUP 4:

Chapter 1.0	Part A Form, dated March 31, 2014
Chapter 3.0	Waste Analysis Plan, dated March 31, 2014
Chapter 4.0	Process Information, dated September 30, 2013
Appendix 4B	Tank Integrity Assessment, dated December 31, 2002
Chapter 5.0	Groundwater Monitoring, dated (not applicable)
Chapter 6.0	Procedures to Prevent Hazards, dated December 31, 2014
Chapter 7.0	Contingency Plan, dated December 31, 2014
Chapter 8.0	Personnel Training, dated September 30, 2013
Chapter 11.0	Closure, dated September 30, 2013

III.4.B COMPLIANCE WITH UNIT-SPECIFIC PERMIT CONDITIONS

III.4.B.1 Portions of permit attachment 4 (DOE/RL-94-02) that are not made enforceable by inclusion in the applicability matrix for that document are not made enforceable by reference in this document.

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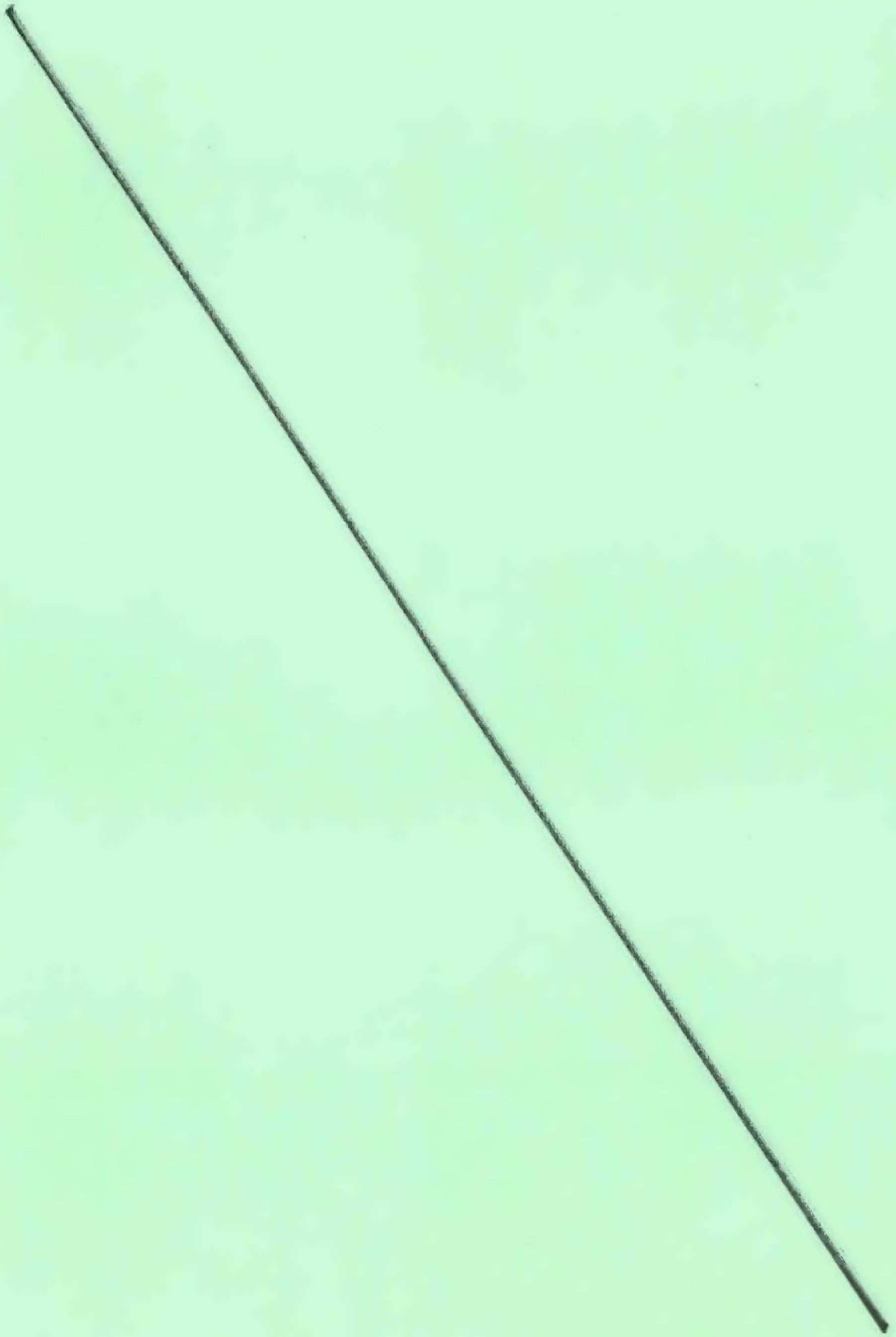

CHAPTER 1.0
PART A FORM

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WASHINGTON STATE DEPARTMENT OF ECOLOGY

Dangerous Waste Permit Application Part A Form

Date Received	Reviewed by::	Date:	09292008
Month Day Year	Approved by::	Date:	09292008
09252008			

I. This form is submitted to: (place an "X" in the appropriate box)

☒	Request modification to a final status permit (commonly called a "Part B" permit)
☐	Request a change under interim status
☐	Apply for a final status permit. This includes the application for the initial final status permit for a site or for a permit renewal (i.e., a new permit to replace an expiring permit).
☐	Establish interim status because of the wastes newly regulated on: (Date)
	List waste codes:

II. EPA/State ID Number

WA7890008967

III. Name of Facility

US Department of Energy – Hanford Facility

IV. Facility Location (Physical address not P.O. Box or Route Number)

A. Street

825 Jadwin

City or Town	State	ZIP Code
Richland	WA	99352

County Code (if known)	County Name
005	Benton

B. Land Type	C. Geographic Location Latitude (degrees, mins, secs)	Longitude (degrees, mins, secs)	D. Facility Existence Date Month Day Year
F	Refer to TOPO Map (Section XV.)		03 02 1943

V. Facility Mailing Address

Street or P.O. Box

P.O. Box 450

City or Town	State	ZIP Code
Richland	WA	99352

VI. Facility contact (Person to be contacted regarding waste activities at facility)		
Name (last)	**(first)**	
Smith	Kevin	
Job Title	**Phone Number (area code and number)**	
Manager	(509) 372-2315	
Contact Address		
Street or P.O. Box		
P.O. Box 450		
City or Town	**State**	**ZIP Code**
Richland	WA	99352

VII. Facility Operator Information		
A. Name		**Phone Number**
Department of Energy Owner/Operator Washington River Protection Solutions, LLC Co-Operator for 242-A Evaporator*		(509) 372-2315 (509) 372-9138*
Street or P.O. Box		
P.O. Box 450 P.O. Box 850*		
City or Town	**State**	**ZIP Code**
Richland	WA	99352
B. Operator Type	F	
C. Does the name in VII.A reflect a proposed change in operator?	☐ Yes ☒ No	
If yes, provide the scheduled date for the change:	**Month**	**Day** **Year**
D. Is the name listed in VII.A. also the owner? If yes, skip to Section VIII.C.	☐ Yes ☒ No	

VIII. Facility Owner Information		
A. Name	**Phone Number (area code and number)**	
Kevin W. Smith, Operator/Facility-Property Owner	(509) 372-2315	
Street or P.O. Box		
P.O. Box 450		
City or Town	**State**	**ZIP Code**
Richland	WA	99352
B. Owner Type	F	
C. Does the name in VIII.A reflect a proposed change in owner?	☐ Yes ☒ No	
If yes, provide the scheduled date for the change:	**Month**	**Day** **Year**

IX. NAICS Codes (5/6 digit codes)													
A. First							**B. Second**						
5	6	2	2	1		Waste Treatment & Disposal	9	2	4	1	1	0	Administration of Air & Water Resource & Solid Waste Management Programs
C. Third							**D. Fourth**						

5	4		1	7	1		Research & Development in the Physical, Engineering, & Life Sciences												

X. Other Environmental Permits (see instructions)

A. Permit Type			B. Permit Number											C. Description
	E		A	O	P	0	0	-	0	5	-	0	0	5	Title V Air Operating Permit
	E		A	I	R	1	2	-	3	0	6				FF-01 Approval Approval Date for AIR 12-306: 2/23/2012
	E		A	4	0	4	1								Petroleum Underground Storage Tank License

XI. Nature of Business (provide a brief description that includes both dangerous waste and non-dangerous waste areas and activities)

The 242-A Evaporator is used to treat and store mixed waste from the DST System. Two waste streams leave the 242-A Evaporator following the treatment process: a concentrated slurry waste stream that is routed to the DST System; and a process condensate waste stream that is routed to the Liquid Effluent Retention Facility.

The waste fed to the 242-A Evaporator is regulated as a mixed waste with the same waste constituents as the waste in the DST System. The concentrated slurry is a characteristic waste (D001, D002, and D003), toxic waste (D004 through D011, D018, D019, D022, D028 through D030, D033 through D036, D038 through D041, and D043), nonspecific source waste (F001 through F005 and F039), and state-only characteristic waste (WT01, WT02, WP01, WP02. Multi-source leachate (F039) is included as a waste derived from nonspecific source waste F001 through F005.

The process condensate is regulated as a mixed waste due to the toxicity of ammonia (WT02) and because it is derived from the waste with a nonspecific source wastes F001 through F005. Multi-source leachate (F039) is included as a waste derived from nonspecific source waste F001 through F005.

The list of dangerous waste constituents under Section XIV.A includes constituents that have not been detected in the waste; however, knowledge of the processes providing the waste to the 242-A Evaporator indicates the strong possibility that these constituents are present in the waste or there is a potential for treating these constituents in the future. The annual waste quantity listed under Section XIV.B was calculated using an operating schedule of 365 days per year, a maximum pumping rate of 655 liters/minute (173 gpm), and a specific gravity of 2.0 for the waste. This calculation was done to provide a maximum estimate of annual waste quantity.

T04

The 242-A Evaporator began waste management operations in March of 1977. The 242-A Evaporator is located in the 200 East Area and is used to treat mixed waste from the Double-Shell Tank (DST) System by removing water and most volatile organics. Two waste streams leave the 242-A Evaporator following the treatment process. The first stream, the concentrated slurry (approximately 40 to 60 percent of the water is removed during evaporation along with a portion of volatile organics), is pumped back into the DST System. The second waste stream, process condensate (containing a portion of the volatile organics removed from the mixed waste during the evaporation process), is routed through condensate filters before release to a retention basin (Liquid Effluent Retention Facility). Off gasses from the process are routed through a de-entrainment unit, a prefilter, and high-efficiency particulate air filters before being discharged to the environment. The 242-A Evaporator is used to treat up to 943,000 liters (~249,000 gallons) of mixed waste per day, based on the 655 liters/minute (173) gpm capacity of the spare feed pump for AW-102.

S02

Tank TK-C-100, a 4.3-meter (14-foot) diameter by 5.9-meter (19-foot) high tank with a maximum design capacity of 67,380 liters (17,800 gallons) is located in the condensate room. Process condensate from the primary, inter-, and after-condensers drain by gravity to tank TK-C -100, which is constructed of stainless steel. In addition, tank TK-C-100 receives potentially contaminated drainage from the vessel vent system via a 102 -liter (27 gallon) seal pot.

Tank C-A-1 is located in the evaporator room and consists of two sections: the lower (liquid) section, a 4.3-meter (14-foot) diameter stainless steel shell, and an upper (vapor) section, a 3.5-meter (11.6-foot) diameter stainless steel shell, containing two wire-mesh de-entrainment pads for the removal of liquids and solids that could be carried into the vapor header. Process slurry from the reboiler discharges to the evaporator vessel (tank C-A-1). Concentrated process slurry exits the lower section of tank C-A-1 via the 28-inch recirculating line. Vapor flows out of tank C-A-1 through a 42-inch vapor line at the top. The maximum design capacity of tank C-A-1 is 103,217 liters (27,267 gallons).

EXAMPLE FOR COMPLETING ITEMS XII and XIII (shown in lines numbered X-1, X-2, and X-3 below): A facility has two storage tanks that hold 1200 gallons and 400 gallons respectively. There is also treatment in tanks at 20 gallons/hr. Finally, a one-quarter acre area that is two meters deep will undergo *in situ vitrification.*

Section XII. Process Codes and Design Capacities								Section XIII. Other Process Codes							
Line Number		A. Process Codes (enter code)			B. Process Design Capacity 1. Amount	B. Process Design Capacity 2. Unit of Measure (enter code)	C. Process Total Number of Units	Line Number		A. Process Codes (enter code)			B Process Design Capacity 1. Amount	B Process Design Capacity 2. Unit of Measure (enter code)	C. Process Total Number of Units	D. Process Description
X	1	S	0	2	1,600	G	002	X	1	T	0	4	700	C	001	In situ vitrification
X	2	T	0	3	20	E	001									
X	3	T	0	4	700	C	001									
	1	T	0	4	943,000	V	001		1							
	2	S	0	2	170,597	L	002		2							
	3								3							
	4								4							
	5								5							
	6								6							
	7								7							
	8								8							
	9								9							
1	0							1	0							
1	1							1	1							
1	2							1	2							
1	3							1	3							
1	4							1	4							
1	5							1	5							
1	6							1	6							
1	7							1	7							
1	8							1	8							
1	9							1	9							
2	0							2	0							
2	1							2	1							
2	2							2	2							
2	3							2	3							
2	4							2	4							
2	5							2	5							

XIV. Description of Dangerous Wastes

Example for completing this section: A facility will receive three non-listed wastes, then store and treat them on-site. Two wastes are corrosive only, with the facility receiving and storing the wastes in containers. There will be about 200 pounds per year of each of these two wastes, which will be neutralized in a tank. The other waste is corrosive and ignitable and will be neutralized then blended into hazardous waste fuel. There will be about 100 pounds per year of that waste, which will be received in bulk and put into tanks.

Line Number	A. Dangerous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Processes									(2) Process Description [If a code is not entered in D (1)]
							(1) Process Codes (enter)									
X 1	D	0	0	2	400	P	S	0	1	T	0	1				
X 2	D	0	0	1	100	P	S	0	2	T	0	1				
X 3	D	0	0	2												Included with above
1	D	0	0	1	687,702,298	K	T	0	4							
2	D	0	0	2		K	T	0	4							
3	D	0	0	3		K	T	0	4							
4	D	0	0	4		K	T	0	4							
5	D	0	0	5		K	T	0	4							
6	D	0	0	6		K	T	0	4							
7	D	0	0	7		K	T	0	4							
8	D	0	0	8		K	T	0	4							
9	D	0	0	9		K	T	0	4							
10	D	0	1	0		K	T	0	4							
11	D	0	1	1		K	T	0	4							
12	D	0	1	8		K	T	0	4							
13	D	0	1	9		K	T	0	4							
14	D	0	2	2		K	T	0	4							
15	D	0	2	8		K	T	0	4							
16	D	0	2	9		K	T	0	4							
17	D	0	3	0		K	T	0	4							
18	D	0	3	3		K	T	0	4							
19	D	0	3	4		K	T	0	4							
20	D	0	3	5		K	T	0	4							
21	D	0	3	6		K	T	0	4							
22	D	0	3	8		K	T	0	4							
23	D	0	3	9		K	T	0	4							
24	D	0	4	0		K	T	0	4							
25	D	0	4	1		K	T	0	4							

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Line Number	A. Dangerous Waste No. (enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Process (1) Process Codes (enter)	D. Process (2) Process Description [If a code is not entered in D (1)]
26	D043		K	T04	
27	WT01		K	T04	
28	WT02		K	T04	
29	WP01		K	T04	
30	WP02		K	T04	
31	F001		K	T04	
32	F002		K	T04	
33	F003		K	T04	
34	F004		K	T04	
35	F005		K	T04	
36	F039		K	T04	
37	D001	348,241	K	S02	
38	D002		K	S02	
39	D003		K	S02	
40	D004		K	S02	
41	D005		K	S02	
42	D006		K	S02	
43	D007		K	S02	
44	D008		K	S02	
45	D009		K	S02	
46	D010		K	S02	
47	D011		K	S02	
48	D018		K	S02	
49	D019		K	S02	
50	D022		K	S02	
51	D028		K	S02	
52	D029		K	S02	
53	D030		K	S02	
54	D033		K	S02	
55	D034		K	S02	
56	D035		K	S02	
57	D036		K	S02	
58	D038		K	S02	
59	D039		K	S02	
60	D040		K	S02	
61	D041		K	S02	
62	D043		K	S02	
63	WT01		K	S02	
64	WT02		K	S02	
65	WP01		K	S02	

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Line Number	A. Dangerous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Process									
							(1) Process Codes (enter)									(2) Process Description [If a code is not entered in D (1)]
66	W	P	0	2		K	S	0	2							
67	F	0	0	1		K	S	0	2							
68	F	0	0	2		K	S	0	2							
69	F	0	0	3		K	S	0	2							
70	F	0	0	4		K	S	0	2							
71	F	0	0	5		K	S	0	2							
72	F	0	3	9		K	S	0	2							
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100																

XV. Map

Attach to this application a topographic map of the area extending to at least one (1) mile beyond property boundaries. The map must show the outline of the facility; the location of each of its existing and proposed intake and discharge structures; each of its dangerous waste treatment, storage, recycling, or disposal units; and each well where fluids are injected underground. Include all springs, rivers, and other surface water bodies in this map area, plus drinking water wells listed in public records or otherwise known to the applicant within ¼ mile of the facility property boundary. The instructions provide additional information on meeting these requirements.

Topographic map is located in the Ecology Library

XVI. Facility Drawing

All existing facilities must include a scale drawing of the facility (refer to instructions for more detail).

XVII. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, recycling, and disposal areas; and sites of future storage, treatment, recycling, or disposal areas (refer to instructions for more detail).

XVIII. Certifications

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Operator Name and Official Title (type or print) Shirley J. Olinger, Manager U.S. Department of Energy Office of River Protection	**Signature**	**Date Signed** 9/15/08
Co-Operator* Name and Official Title (type or print) William J. Johnson President and Project Manager Washington River Protection Solutions, LLC	**Signature**	**Date Signed** 9/09/08
Co-Operator – Address and Telephone Number* P.O. Box 850 Richland, WA 99352 (509) 372-9138		
Facility-Property Owner Name and Official Title (type or print) Shirley J. Olinger, Manager U.S. Department of Energy Office of River Protection	**Signature**	**Date Signed** 9/15/08

Comments

Changes from Revision 10 to 10A (modified 03/31/2014):

Section VI, "Facility Contact"

- Updated name and phone number of facility contact

Section VII, "Facility Operator Information"

- Updated phone number of facility contact
- Removed schedule for date as this revision is not a co-operator change

Section VIII, "Facility Owner Information"

- Updated name and phone number of facility owner

Section X, "Other Environmental Permits"

- Specifically named the Hanford Site Air Operating Permit (00-05-006) and FF-01 Approval
- Removed 40 CFR 761, TSCA RBDA Approval letter (EPA 10 Region Administrator) to J.B. Hebdon and J. E. Rasmussen, dated 6/8/04 as this is not a permit.

Section XI, "Nature of Business"

- Under S02, changed the name of "Tank-C-100" to "TK-C-100"

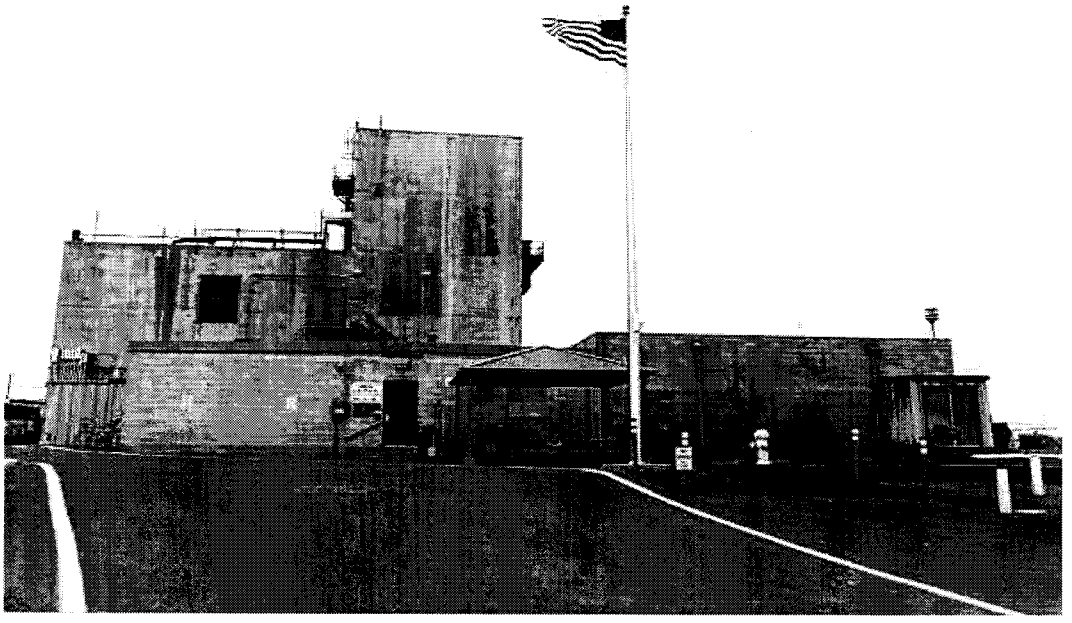
Figures

- Changed "Tank-C-100" to "TK-C-100" and "Process Condenser Pump P-G-100" to "Process Condensate Pump P-C-100" and added metric conversions alongside English units.

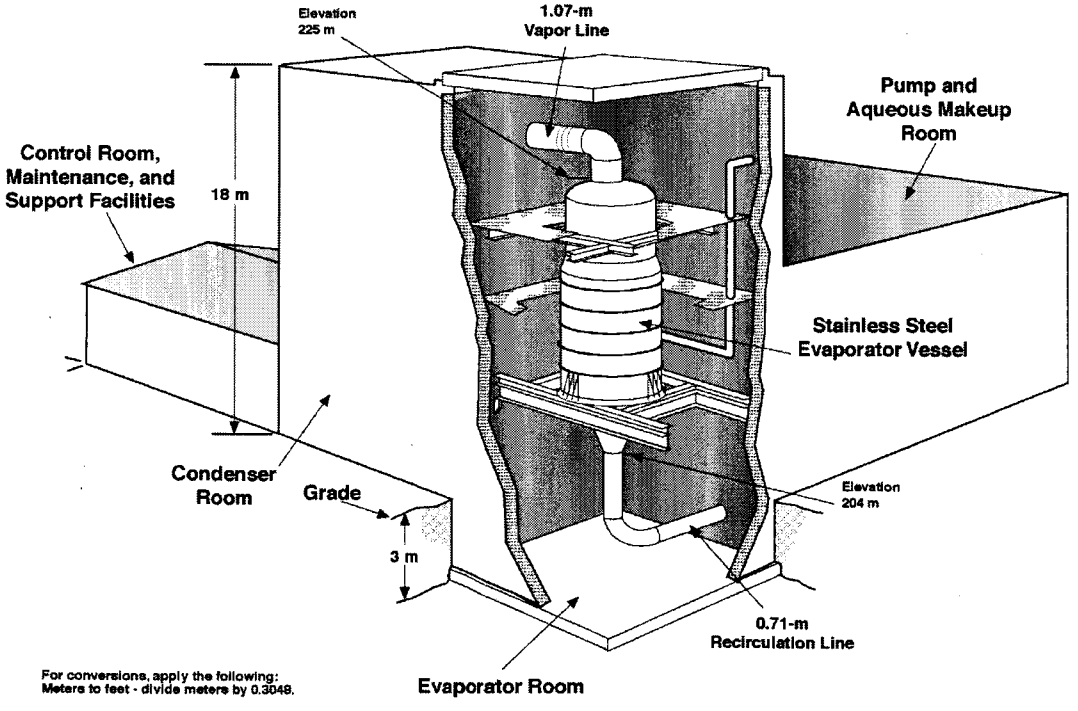
Comments

- Removed the following comment that coincided with a possible date change in section VII: "In Section VII, Facility Operator Information, there is no change to DOE as the Facility Owner/Operator; only a change in Co Operator*. The change in Co Operator* will be effective October 1, 2008."

242-A Evaporator



96080579-19CN
Photo Taken 1996



1 242-A Evaporator
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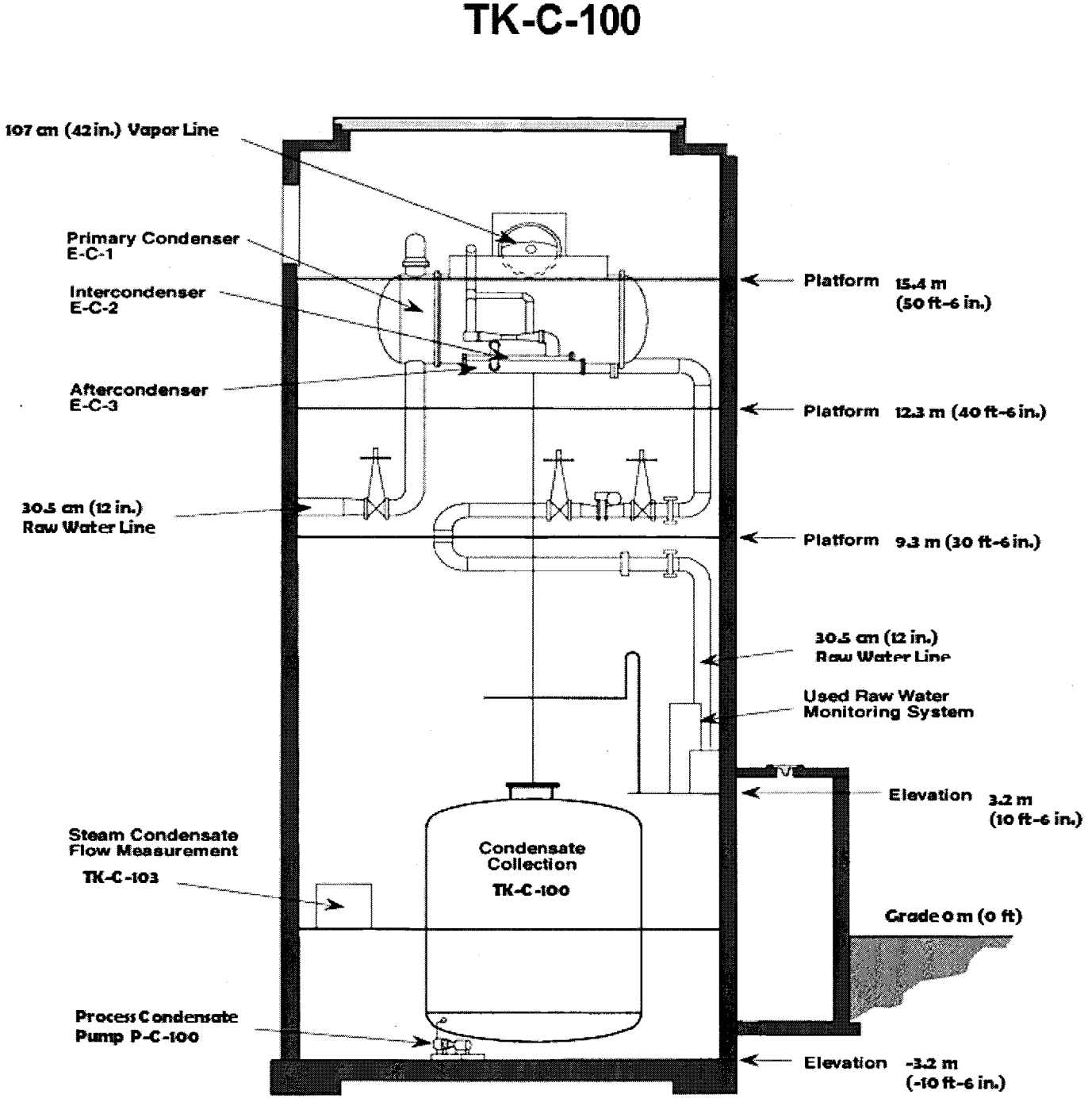

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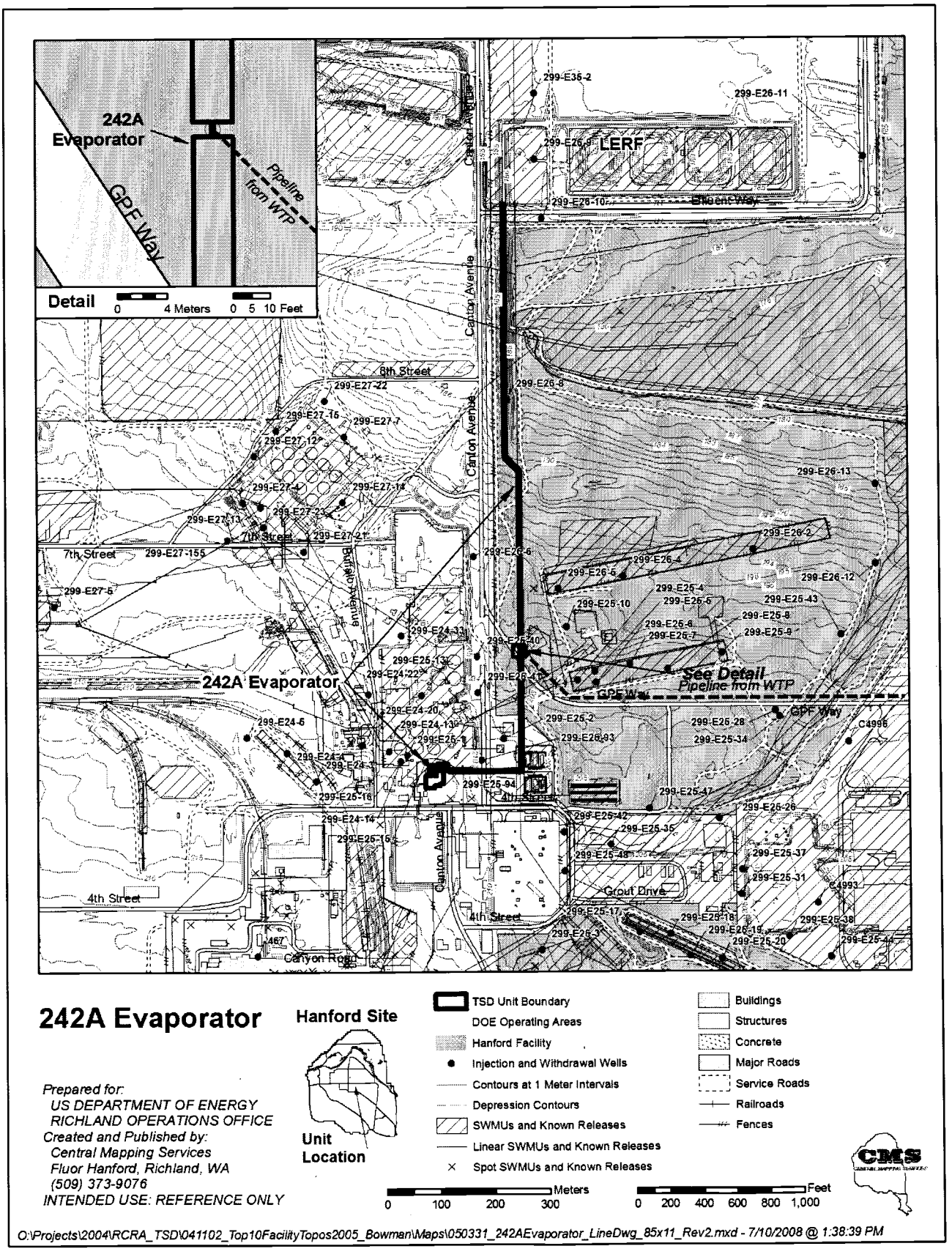
242A Evaporator
GPF Way
Pipeline from WTP
Detail
0 4 Meters 0 5 10 Feet
LERF
Effluent Way
Canton Avenue
6th Street
7th Street
4th Street
Grout Drive
Canyon Road
Bunker Avenue
See Detail
Pipeline from WTP
242A Evaporator
242A Evaporator
Hanford Site
Unit Location
Prepared for:
US DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
Created and Published by:
Central Mapping Services
Fluor Hanford, Richland, WA
(509) 373-9076
INTENDED USE: REFERENCE ONLY
TSD Unit Boundary
DOE Operating Areas
Hanford Facility
Injection and Withdrawal Wells
Contours at 1 Meter Intervals
Depression Contours
SWMUs and Known Releases
Linear SWMUs and Known Releases
Spot SWMUs and Known Releases
Buildings
Structures
Concrete
Major Roads
Service Roads
Railroads
Fences
Meters 0 100 200 300
Feet 0 200 400 600 800 1,000
CMS
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CHAPTER 3.0
WASTE ANALYSIS PLAN

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CHAPTER 3.0
WASTE ANALYSIS PLAN

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GLOSSARY

ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
CAS#	Chemical Abstract Service Number
CFR	Code of Federal Regulations
C_T	total carbon
DOE	U. S. Department of Energy
DQO	data quality objective
DSC	differential scanning calorimeter
DST	Double-Shell Tanks
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ETF	200 Area Effluent Treatment Facility
GC	gas chromatography
HDPE	high-density polyethylene
IC_T	total inorganic carbon
IR	infrared
LERF	Liquid Effluent Retention Facility
MS	mass spectrometry
N/A	not applicable
QA	quality assurance
QC	quality control
RCRA	*Resource Conservation and Recovery Act of 1976*
RPD	relative percent difference
TGA	Thermogravimetric analysis
TOC	total organic carbon
TSD	treatment, storage, and/or disposal
VOA	volatile organic analysis
WAC	Washington Administrative Code
WAP	waste analysis plan

METRIC CONVERSION CHART

Into metric units			Out of metric units		
If you know	Multiply by	To get	If you know	Multiply by	To get
Length			**Length**		
inches	25.40	millimeters	millimeters	0.0393	inches
inches	2.54	centimeters	centimeters	0.393	inches
feet	0.3048	meters	meters	3.2808	feet
yards	0.914	meters	meters	1.09	yards
miles	1.609	kilometers	kilometers	0.62	miles
Area			**Area**		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.092	square meters	square meters	10.7639	square feet
square yards	0.836	square meters	square meters	1.20	square yards
square miles	2.59	square kilometers	square kilometers	0.39	square miles
acres	0.404	hectares	hectares	2.471	acres
Mass (weight)			**Mass (weight)**		
ounces	28.35	grams	grams	0.0352	ounces
pounds	0.453	kilograms	kilograms	2.2046	pounds
short ton	0.907	metric ton	metric ton	1.10	short ton
Volume			**Volume**		
fluid ounces	29.57	milliliters	milliliters	0.03	fluid ounces
quarts	0.95	liters	liters	1.057	quarts
gallons	3.79	liters	liters	0.26	gallons
cubic feet	0.03	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.76456	cubic meters	cubic meters	1.308	cubic yards
Temperature			**Temperature**		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit
Force			**Force**		
pounds per square inch	6.895	kilopascals	kilopascals	0.14504	pounds per square inch

Source: *Engineering Unit Conversions*, M. R. Lindeburg, P.E., Second Ed., 1990, Professional Publications, Inc., Belmont, California.

3.0 WASTE ANALYSIS PLAN

3.1 Introduction

This waste analysis plan (WAP) addresses analysis necessary to manage the waste at the 242-A Evaporator according to requirements included in the *Hanford Facility Resource Conservation and Recovery Act, Dangerous Waste Portion, Permit,* WA7890008967 (Permit), and Washington Administrative Code (WAC), Chapter 173-303.

Modifications of the WAP require modifications of the Permit. Permit modifications are discussed in Permit Condition I.C and WAC 173-303-830.

Where information regarding treatment, management, and disposal of the radioactive source byproduct material and/or special nuclear components of mixed waste (as defined by the Atomic Energy Act of 1954 as amended) has been incorporated into this document, it is not incorporated for the purpose of regulating the radiation hazards of such components under the authority of this Permit or chapter 70.105 RCW and its implementing regulations but is provided for information purposes only.

3.2 Purpose

The purpose of the WAP is to ensure waste at the 242-A Evaporator is managed properly in accordance with WAC 173-303-300. To ensure the waste analysis is comprehensive, a data quality objectives (DQO) analysis was performed on all streams at the 242-A Evaporator. Sampling and analysis identified in the DQO analysis related to meeting Resource Conservation and Recovery Act (RCRA) requirements are included as an integral part of this WAP.

Regulatory and safety issues are addressed in the WAP by establishing boundary conditions for waste to be received and treated at the 242-A Evaporator. The boundary conditions are set by establishing limits for items such as reactivity, waste compatibility, and control of vessel vent organic emissions. Waste that exceeds the boundary conditions would not be acceptable for processing without further actions, such as blending with other waste. In some cases, individual waste streams not acceptable at the 242-A Evaporator may be pre-treated or blended with other compatible waste streams to meet the 242-A waste acceptance criteria. Such pre-treatment or blending, however, would occur at dangerous waste management unit(s) other than the 242-A Evaporator.

3.3 Scope

This WAP discusses sampling and analysis of waste to determine the acceptability of the waste in 'candidate feed tank(s)' for processing at the 242-A Evaporator and characterization of dangerous waste streams generated from the treatment process. A 'candidate feed tank(s)' means one or more tanks in the Double Shell Tank (DST) System, and is typically not the feed tank (241-AW-102). Refer to additional discussion in Section 3.5 for 'candidate feed tanks.'

- **Candidate Feed Tank Acceptance Process** – This process determines the acceptability of DST System waste at the 242-A Evaporator operating capabilities prior to acceptance of the waste at the 242-A Evaporator for treatment. Refer to Section 3.7.
- **Dangerous waste generated from the treatment process** – Sampling and analysis is used to characterize the process condensate waste stream generated from the treatment process. The process condensate is transferred to the Liquid Effluent Retention Facility (LERF). Sampling can be performed either at the 242-A Evaporator or at LERF. A discussion of process condensate sampling at the 242-A Evaporator is included in this WAP, while discussion of process condensate sampling at LERF is included in the Permit, Part III, Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility, *Waste Analysis Plan.* Refer to Section 3.8.

- Samples of other 242-A Evaporator waste streams, such as steam condensate, cooling water, and 242-A-81 back flush water, are taken as required for process control but are excluded from this plan because these streams have been previously characterized and determined to be nondangerous waste streams.

3.4 242-A Evaporator Process Description

The 242-A Evaporator, located in the 200 East Area of the Hanford Site, separates the incoming waste from the DST System into two mixed waste aqueous streams the slurry and the process condensate as described in the following paragraph. The 242-A Evaporator also generates utility waste streams such as cooling water and steam condensate, which do not designate as dangerous waste. Description of the waste processed by the 242-A Evaporator is described in Section 3.5.

The 242-A Evaporator process uses a conventional forced-circulation, vacuum evaporation system to concentrate mixed waste solutions from the DST System tanks. The incoming stream is separated by evaporation into two liquid streams: a concentrated slurry stream and a process condensate stream. The slurry contains the majority of the radionuclides and inorganic constituents. After the slurry is concentrated to the desired amount, the slurry stream is pumped back to the DST System and stored for further treatment. Vapor from the evaporation process is condensed, producing process condensate. The process condensate is transferred to LERF for storage and treatment. Vacuum for the evaporator vessel is provided by two steam jet ejectors. The 242-A Evaporator vessel vent stream is filtered and discharged through an exhaust stack. Figure 3.1 shows a simplified schematic of the 242-A Evaporator process. A more detailed description of the 242-A Evaporator process is provided in Chapter 4.0.

3.5 Waste Identification

All of the waste accepted by the 242-A Evaporator is stored in the DST System. Waste characterization for a campaign is based on sampling and analysis results and/or process knowledge. Based on this information, certain DST System tanks are selected as 'candidate feed tanks' for processing in the 242-A Evaporator. The contents of these candidate feed tanks are subjected to closer scrutiny and evaluated against 242-A Evaporator waste acceptance criteria before the final tank selection is made. To meet waste acceptance criteria, the contents of several tanks could be blended together in the feed tank (241-AW-102) prior to processing. The 241-AW-102 tank is not typically considered a candidate feed tank but can become a candidate feel tank if waste is staged and sampling is performed there. Selection of candidate feed tank(s) for a campaign is outside the scope of this WAP and based on operational needs of the DST system.

Process knowledge is used to determine whether actions to add waste to a tank are acceptable after a candidate feed tank(s) or the 241-AW-102 feed tank has been isolated for a campaign. Operational and maintenance activities can occur at the 242-A Evaporator or the DST System which results in the introduction of operational and maintenance additions into a candidate feed tank(s) or the 241-AW-102 feed tank. In most cases, operational and maintenance waste solution additions are anticipated. Prior to anticipated activities occurring, documentation will be placed in the Hanford Facility Operating Record, 242-A Evaporator unit-specific portion, to show waste acceptance criteria will still be met. The calculation(s) will use, as appropriate, candidate feed tank sampling and analysis results for the proposed campaign, candidate feed tank sampling and analysis results from the previous campaign for waste residing in the 241-AW-102 feed tank, coupled with information about the type and quantity of solutions to be introduced into the isolated waste. When the operational and maintenance waste solution addition occurs and is unanticipated, documentation will be prepared after the event and prior to processing and will be placed in the Hanford Facility Operating Record, 242-A Evaporator unit-specific portion, in a similar fashion to the anticipated event.

Anticipated or unanticipated water additions to isolated candidate feed tank(s) or the 241-AW-102 feed tank do not require documentation. Water additions will not affect whether the waste acceptance criteria will be met.

3.5.1 General Constituent Description

The only waste stream processed at the 242-A Evaporator is the DST System waste stream. The mixed waste is an aqueous solution containing dissolved inorganic salts such as sodium, potassium, aluminum, hydroxides, nitrates, and nitrites. The mixed waste in some tanks has detectable levels of heavy metals such as lead, chromium, and cadmium. The radionuclide content includes fission products such as Sr-90 and Cs-137, and actinide series elements such as uranium and plutonium. Small quantities of ammonia and organics, such as acetone, butanol, and tri-butyl phosphate, could be present. Waste received in the DST System has been chemically adjusted to ensure the waste is compatible with materials used for construction of the waste tanks and the 242-A Evaporator. The physical consistency of the waste in the DST System ranges from liquid supernate to thick sludge. Waste fed to the 242-A Evaporator is supernate taken from the DST System; the sludge is not processed through the 242-A Evaporator.

The slurry, which results from treatment of DST System waste in the 242-A Evaporator, is an aqueous solution containing the same components as the feed stream with increased concentrations of non-volatile organic and inorganic constituents. The slurry may also contain solids precipitated due to the liquid volume reduction. Most of the volatile constituents in the feed are separated into the process condensate. The process condensate, a mixed waste, is a dilute aqueous solution with ammonia, volatile organics, and trace quantities of non-volatile constituents.

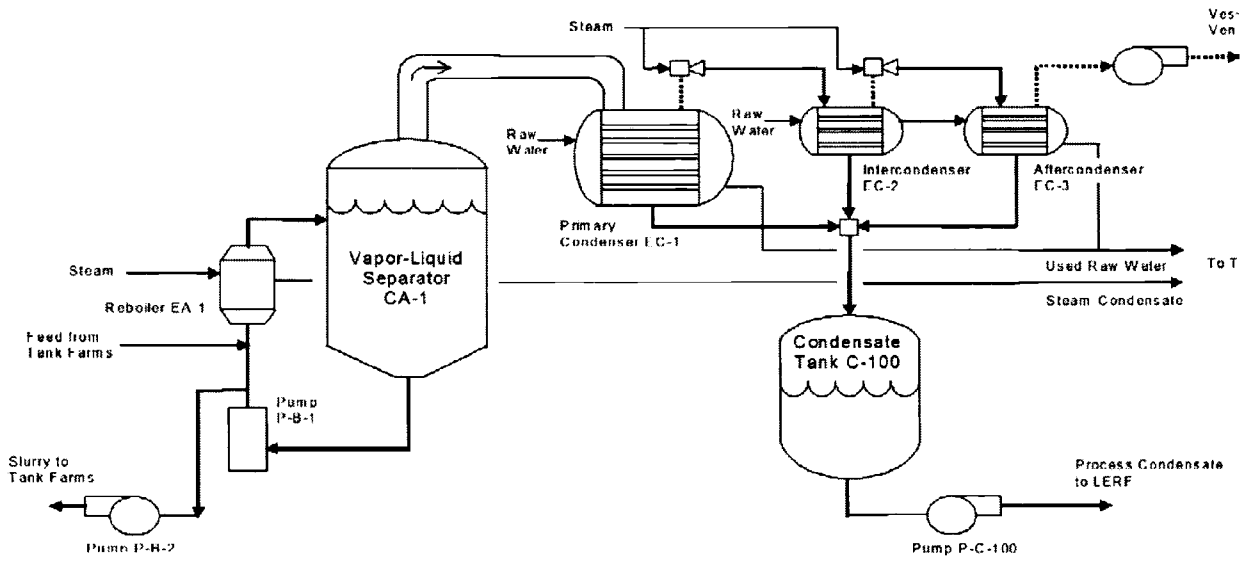

Figure 3.1. 242-A Evaporator Simplified Schematic

3.5.2 Classification of Waste

The waste processed at the 242-A Evaporator is classified as a mixed waste because it contains a radioactive component and a chemical component that designates as a dangerous waste. The waste processed is designated and assigned dangerous waste codes for waste stored in the DST System as follows.

- Waste generated from the evaporation treatment process includes slurry and process condensate. The concentrated slurry and process condensate are mixed waste since they are derived from the treatment of the DST System listed dangerous waste due to waste codes F001 through F005. The two waste streams may also exhibit one or more dangerous waste characteristics (WAC 173-303-090).
- Other 242-A Evaporator waste streams do not contact mixed waste solutions, such as cooling water and steam condensate. These waste streams are not discussed in this WAP because these streams do not designate as dangerous waste under WAC 173-303. Any waste sampling and analysis for purposes of designation would be conducted pursuant to WAC 173-303-170, outside the scope of this Permit.

3.5.3 Dangerous Waste Numbers

The 242-A Evaporator is specifically designed to accept DST System waste directly from feed tank 241-AW-102. Waste acceptable for transfer to the 242-A Evaporator could be assigned any of the dangerous waste numbers found in Chapter 1.0, Part A, Form (latest Revision). These numbers are identical to the ones in the Part A, Form (latest Revision) for the DST System. Process knowledge and historical data indicate that the slurry stream returning to the DST System contains the same dangerous waste constituents as the waste feed, so the same dangerous waste numbers are applicable to the feed and slurry.

Table 3.1 lists the dangerous waste numbers assigned to the process condensate. The process condensate is designated with the dangerous waste numbers F001 to F005 because the process condensate is derived from treatment of DST System waste assigned these numbers.

Table 3.1. Waste Designation for Process Condensate.

Waste number	Characteristic/Source	Basis for designation
F001	Spent halogenated solvents	Derived from F001 waste
F002	Spent halogenated solvents	Derived from F002 waste
F003	Spent nonhalogenated solvents	Derived from F003 waste
F004	Spent nonhalogenated solvents	Derived from F004 waste
F005	Spent nonhalogenated solvents	Derived from F005 waste
F039	Multi-source leachate from waste disposal operations	Future receipt of waste with the F039 number, derived from F001 through F005.

The slurry waste stream generated at the 242-A Evaporator is also a mixed waste, but the slurry waste is not stored at the 242-A Evaporator, as it is transferred back to the DST system, and therefore not subject to the WAP. In addition to the F001–F005 dangerous waste numbers, the slurry waste may designate for one or more applicable characteristic dangerous waste numbers.

3.6 Waste Acceptance Process

This section describes the actions performed before every campaign to determine candidate feed tank waste is acceptable for treatment at the 242-A Evaporator.

Because initial acceptance of the process condensate at LERF is based on completion of a waste stream profile using candidate feed tank data, LERF waste acceptance criteria are also considered in the selection of a candidate feed tank. DST wastes are not accepted for treatment in the 242-A Evaporator unless the 242-A Evaporator waste acceptance criteria are satisfied, and the process condensate projected to be generated via treatment in the 242-A Evaporator satisfies LERF waste acceptance criteria.

The 242-A operates as a batch treatment system. Feed for each evaporator campaign must follow this waste acceptance process for waste verification and waste acceptance. Therefore, there is no need to periodically re-evaluate any waste stream.

Evaluation of data produced from the sampling and analysis of candidate feed tank waste for each campaign are documented in the campaign specific process control plan, process memo and associated engineering calculations, which are maintained in the Hanford Facility Operating Record, 242-A Evaporator, unit specific portion. Process control plans are prepared to describe and define the specific controls required for a planned campaign. Each process control plan includes the information described below:

- **Waste Feed Description** - describes the source, volume, and any potential mixing or blending data.
- **Campaign Objectives** – details the waste reduction volume estimates and specific gravities expected for each campaign.
- **Candidate Feed Tank Sampling and Analysis Evaluation**– describes the actual sampling and analysis data for each candidate feed tank for each campaign. This evaluation includes review of data to the 242-A Evaporator waste acceptance criteria, other health and safety controls beyond the scope of the Permit for operation of the 242-A Evaporator, and calculation of the expected process condensate constituent concentrations for review to the LERF waste acceptance criteria.
- **Process Controls and Campaign Recommendations** – describes the limits and conditions for each campaign based on the campaign objectives and candidate feed tank analytical data.

3.7 Candidate Feed Tank Waste Acceptance Process

Once possible feed candidate tanks have been identified, the method for determining if the waste in a candidate feed tank is acceptable for processing is followed. This section describes the waste acceptance process and Figure 3.2 provides an overall process flow.

The following activities are performed to determine if candidate waste feed will meet the 242-A Evaporator waste acceptance criteria.

- Perform a boil down study to evaluate the impacts of solids formation as specified in the Evaporator DQO (Banning 2009).
- Evaluate Potential for Energetics/Uncontrolled Chemical Reactions: There must be no exothermic reaction of waste constituents that occur below 168°C (335°F), and the ratio of exotherm-to-endotherm energy be less than 1.
- Evaluate Potential for Separable Organic Phase: Prior to operation of the evaporator, the absence of separable organics in the feed must be verified or managed to preclude transfer to the 242-A Evaporator.
- Calculate Process Condensate Ammonia and Organic Concentrations: Ammonia and volatile organic concentrations are needed for the LERF waste profile sheet (refer to the Permit, Part III, LERF and 200 Area ETF, unit-specific conditions and Chapter 3.0, Waste Analysis Plan.)

3.7.1 Selecting Candidate Feed Tanks

For each 242-A Evaporator campaign, DST System tanks are selected as candidate feed tanks based on process knowledge of chemical properties with respect to waste acceptance criteria (Section 3.6.1).

The initial determination of possible candidate feed tanks is outside the scope of this WAP and is based on operational needs of the DST system.

3.7.2 Candidate Feed Tank Sampling

After a candidate tank is selected, the waste in the tank is sampled and analyzed and the data evaluated to confirm waste acceptability through development of a Tank Sampling and Analysis Plan (Figure 3.2). Every candidate feed tank is sampled and analyzed to confirm waste acceptability. Sampling of a candidate feed tank waste for treatment in the 242-A Evaporator is performed according to the requirements of this WAP. The WAP reflects the rationale for determining the number of samples in the DQO (Banning 2009). The waste is sampled in the DST System, prior to transfer and acceptance at the 242-A Evaporator.

Four (4) representative samples of aqueous candidate feed tank waste supernatant, from one tank riser, are required. These samples are adequate to ensure the resulting waste characterization data are of sufficient quality for the data's planned purposes. The data are compared to the 242-A Evaporator waste acceptance criteria, applied to the 242-A Evaporator Process Control Plan for purposes of predicting process condensate properties, and used for comparison to LERF waste acceptance criteria for liner compatibility. The rationale for this statement is that the estimates of the variability of DST System content wastes properties is sufficiently defined and consistent that four (4) samples are sufficient. No solid samples are collected.

The four (4) samples will be collected from the following depths. One (1) surface sample to address the possible existence of a separable organic layer and three (3) subsurface samples are obtained from each waste candidate feed tank. The depths of the subsurface samples are determined by the Permittees based on best professional judgment (based on Table 3.3). In the event multiple candidate feed tanks are identified, sampling can occur after wastes are blended. The identified candidate feed tanks coupled with process knowledge of the feed tank (241-AW-102) provide a representative set of data for determining waste acceptance in the 242-A Evaporator. This is due to the consistency in the type of feed waste and the source of the waste. Waste in candidate feed tanks must first be accepted into the DST System by meeting the corresponding DST System waste acceptance criteria. Waste management in the DST System results in supernatant that is relatively homogeneous within each tank recognizing some concentration gradients may exist vertically within each tank caused by the transfer history and limited mixing actions within the DST System. Lateral stratification is not expected.

3.7.3 Assessing Candidate Feed Tank Sampling and Analysis Results

Candidate feed tank sampling and analysis, in conjunction with the waste acceptance criteria in Section 3.9, are used to assess whether established limits (limits are defined in the 242 Evaporator DQO, Banning 2009 and Permit, Part III, LERF and 200 Area ETF, unit-specific conditions and Chapter 3.0, Waste Analysis Plan) would be exceeded. Based on the results, three possible options are implemented:

- The waste is acceptable for processing at the 242-A Evaporator without further actions.
- The waste is unacceptable for processing as a single batch, but is acceptable if blended with other waste to be processed or the waste can be pre-treated as necessary to fully satisfy the 242-A Evaporator waste acceptance criteria.
- The waste is unacceptable for processing, and no acceptable pre-treatment or blending options can be identified.

3.8 Sampling Process for Dangerous Wastes Generated From Treatment

Two mixed waste streams are generated as the result of the 242-A Evaporator process: process condensate and concentrated waste slurry. Sampling of the concentrated waste slurry is not necessary under this WAP in order to return the waste back to the DST System.

Sampling of process condensate is required for confirmation that the waste meets the LERF waste acceptance criteria with respect to LERF liner compatibility.

Depending on programmatic needs, this sampling can be performed at the 242-A Evaporator during a campaign or at LERF after the campaign is completed.

Before the start of a 242-A Evaporator campaign, the decision whether process condensate sampling will be performed at the 242-A Evaporator or at LERF is documented in the process control plan, which is maintained in the Hanford Facility Operating Record, 242-A Evaporator Unit specific portion. Planning for process condensate sampling at the 242-A Evaporator (i.e., number of samples, when samples are taken, etc.) is completed before starting the campaign. Sampling at LERF is beyond the scope of this WAP.

3.8.1 Determining the Number of Process Condensate Samples

The purpose of sampling the process condensate stream at the 242-A Evaporator is to confirm that the stream is acceptable for treatment at the ETF. Before starting a 242-A Evaporator campaign where sampling will be performed at the 242-A Evaporator instead of LERF, characterization of the process condensate will be developed based on process knowledge. Process knowledge includes previous documented process condensate analysis, estimated concentrations based on documented candidate feed tank sampling and analysis, etc. Sampling of the process condensate stream at the 242-A Evaporator is performed during the campaign to confirm the characterization. Sampling frequency is determined using the following equation:

> Number of process condensate = N + 1 samples required (per campaign). Where N is the number of candidate feed tanks to be processed during the campaign.

For example, a campaign processing waste from only one candidate feed tank would require two samples, while a campaign processing waste from three candidate feed tanks would require four samples. Sampling is spread approximately evenly through the campaign, allowing for operational events such as unexpected shutdowns and planned maintenance outages. This sample frequency represents a confirmation rate of about one sample every 5 to 8 days of processing. This is reasonable based on the relatively homogeneous tank waste feed and the more or less steady state of evaporator operations. Therefore, the process condensate waste stream should also be relatively homogeneous, and multiple samples are not necessary to document or account for waste stream variability. A minimum of two samples is taken to meet LERF waste acceptance criteria.

3.8.2 Assessing Process Condensate Sampling and Analysis Results

The process condensate sample and analysis results are assessed against the LERF waste acceptance criteria.

3.9 242-A Evaporator Waste Acceptance Criteria

Waste acceptance criteria for the 242-A Evaporator have been established from regulatory requirements, operating experience, previous sample analyses, and engineering calculations. Processing criteria are maximum and/or minimum values of a waste analyte that, if exceeded, alert the operator that management of the waste requires further attention. The rationale for selecting a given analyte for inclusion in this WAP, as required by WAC 173-303-300, is indicated in this section for each test and/or analyte.

Additional analyses (such as specific gravity and radionuclide analysis) of the feed tanks, process condensate, and other streams are performed to ensure that the facility is operating within established parameters. This process control sampling and analysis is outside the scope of this plan because it is not used to assess compatibility of the waste with other waste and with the 242-A Evaporator tank systems.

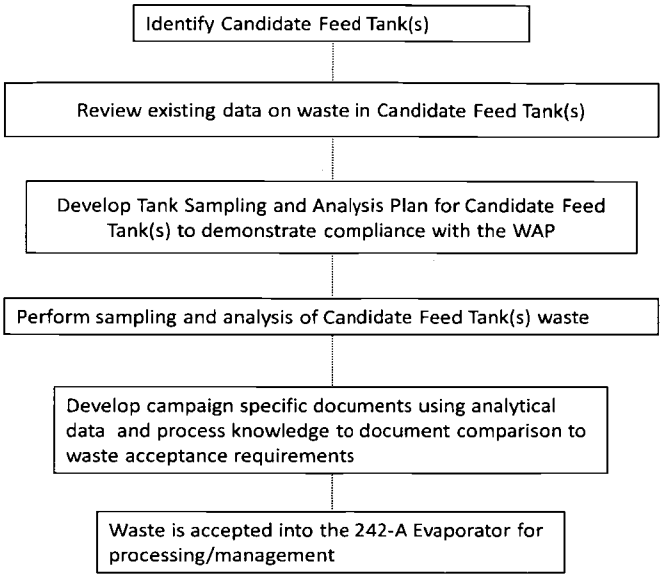

Figure 3.2. 242-A Evaporator Waste Acceptance Process

3.9.1 Candidate Feed Tank Waste Acceptance Criteria

The following sections discuss waste acceptance criteria for candidate feed tanks to be processed in the 242-A Evaporator.

3.9.1.1 Exothermic Reactions

WAC 173-303-395(1) requires waste handling be conducted to prevent an uncontrolled reaction that could damage the tank system structural integrity or threaten human health or the environment. To evaluate the possibility of an uncontrolled reaction at the elevated temperatures in the evaporator vessel, a differential scanning calorimeter (DSC) test is performed on samples of all candidate waste to be processed. DSC measures the amount of heat absorbed or released by a sample as the temperature is increased. Waste exhibiting exotherms below 168 °C (335 °F), or with an absolute value of the exotherm-to-endotherm ratio greater than one, will not be processed in the 242-A Evaporator without further technical evaluation.

3.9.1.2 Compatibility

WAC 173-303-640(10) and WAC 173-303-395(1) requires waste handling be conducted to prevent an uncontrolled reaction that could damage the 242-A Evaporator tank system structural integrity or threaten human health or the environment. To verify there will be no adverse effects because of mixing the contents of different candidate feed tanks in the feed tank (241-AW-102) and the 242-A Evaporator vessel (C-A-1), a compatibility evaluation is performed on waste in the candidate feed tanks. As samples from each of the planned waste sources are mixed, observations are made to note any changes in color, temperature, clarity, or other visually determinable characteristic. This would indicate an unexpected chemical reaction that might have an impact on 242-A Evaporator operations.

If such visible changes are observed when mixing samples, the waste would not be processed in the 242-A Evaporator without further technical evaluation.

3.9.1.3 Separable Organics

The waste surface layer sample collected from each candidate feed tank or combined feed in 241-AW-102 is visually inspected to determine whether separable organics are present in the waste and requires the waste feed to be rejected for processing or allows waste processing. In addition, testing of the sample is performed by either percent water to determine if the whole sample is organic and cannot be discerned visibly or by total carbon/total inorganic carbon. The action limit of 25% water will indicate if the sample is all organic. Results of the visual inspection and testing are used together to determine if the waste can be accepted at the 242-A Evaporator for processing. If there is a separate visible organic layer in the candidate feed tank samples then the waste transfer to 242-A Evaporator must incorporate engineering controls to eliminate (exclude) the organic layer during the transfer.

3.9.1.4 Organic Constituents

Because process condensate generated at the 242-A Evaporator is transferred only to the LERF, the 242-A Evaporator will not accept waste for treatment whose data review does not allow treatment and storage in LERF. Process condensate could contain trace quantities of chemicals that could cause degradation of the liner material if found to exceed specifications. To predict the concentrations expected in the process condensate, the candidate feed tank waste is sampled and analyzed for organics and the results are then used to predict the concentrations in the campaign specific process condensate. The level of volatile organics in the feed is limited to ensure organic constituents that transfer to the process condensate are compatible with the LERF liner as specified in the LERF waste acceptance criteria.

The 242-A Evaporator performs distillation of waste containing organic concentrations greater than 10 parts per million by weight; therefore, organic air emissions are subject to WAC 173-303-690 (which incorporates 40 CFR 264, Subpart AA, by reference). Organic emissions from TSD units on the Hanford Site subject to 40 CFR 264, Subpart AA are controlled to ensure emissions to do not exceed 1.4 kilograms per hour and 2,800 kilograms per year. To ensure these requirements are met, the levels of volatile organics in the 242-A Evaporator feed must be limited to prevent excessive organic emissions during processing. Engineering calculations were used to determine the feed limits given in Table 3.2. The limits include a modifier "(R-1)/R", which adjusts the limits based on the campaign's planned boiloff rate. R is the ratio of feed flow rate to slurry flow rate. Typically, R is between 1 to 2, making the range of (R-1)/R 0 to 0.5.

In addition, analysis of the individual components in Table 3.2, total carbon (C_T) and total inorganic carbon (IC_T) analysis are performed as a screening tool to account for other organic species that might be present in the waste. The value of C_T minus IC_T represents the total organic concentration in the waste. If the C_T minus IC_T limit is exceeded, additional volatile organic species might be present and a more detailed evaluation will be conducted to determine organic emissions out of the vessel vent. The limit for evaluation is 174.4 milligrams per liter, based on the conservative assumption that all organic species present in the waste are as volatile as acetone. Acetone was chosen because of its relatively high volatility and low percentage of carbon.

Based on the liner manufacturer's compatibility data, waste acceptance criteria from the LERF will impose concentration limits on classes of constituents that could potentially degrade the liner. To ensure that these limits are not exceeded in the process condensate, the concentration limits are applied to the candidate feed tanks as well, with the modifier "(R-1)/R". A C_T minus IC_T analysis, similar to the one described previously, is also applied to the LERF liner limits. The strictest limit for organic species is 2,000 milligrams per liter. Assuming the organic is acetone (with its low percentage of carbon); this converts to a carbon value of 1,240 milligrams per liter.

The calculations in Table 3.2 require use of the ɔsum of the fractionsɔ technique. A calculation is performed where the analysis of each constituent is divided by its associated limit to produce a fraction of the limit. If the sum of these fractions is less than 1, the waste meets the requirements in the tables.

3.9.2 Process Condensate Waste Acceptance Criteria

The waste acceptance criteria for process condensate sampling, including treatability, LERF liner compatibility, compatibility with other waste, etc., is given in the Permit, Part III, LERF and 200 Area ETF unit-specific conditions and Chapter 3.0, Waste Analysis Plan.

Table 3.2. Candidate Feed Tank Limits for Vessel Vent Organic Dischargea.

Feed Constituent	Limit (milligrams per liter) b, c
Acetone	174.4 ([R-1]/R)
1-Butanol	452 ([R-1]/R)
2-Butoxyethanol	190.4 ([R-1]/R)
2-Butanone	116 ([R-1]/R)
Tri-butyl phosphate	2.03E+4 ([R-1]/R)
Total carbon and Total inorganic carbon	(CT-ICT) < 174.4 ([R-1]/R) (as acetone)

[a] Limits are based on a maximum continuous operating time equivalent to 6 months per year. If total operating time is expected to exceed 6 months per year, the limits must be re-evaluated.

$$\sum_{n=1}^{i}\left(\frac{\text{Conc}_n}{\text{LIMIT}_n}\right) \le 1$$

[b] The limits are applied using the sum of the fractions technique: where i is the number of organic constituents detected in analysis of the waste feed tank. Total carbon and total inorganic carbon analysis are not part of the summation.

[c] R is the ratio of feed flow rate to slurry flow rate (typically R = between 1 and 2).

3.10 Sample Collection and Analysis

This section discusses sampling and analysis, including sampling procedures, sample collection points, sample quality assurance/quality control (QA/QC), and selection of analytes.

3.10.1 Sample Collection

This section describes collection of candidate feed tank waste and process condensate samples. Candidate feed tank waste is sampled and analyzed before the start of each 242-A Evaporator campaign. Process condensate samples are taken at the 242-A Evaporator only if the decision is made before the start of the campaign that sampling will be done at the 242-A Evaporator instead of LERF.

3.10.1.1 Candidate Feed Tank Sample Collection

Candidate feed tank waste samples are obtained by using a grab sampling method (e.g. "bottle on a string method") specified in ASTM E300-86. The number of lateral sampling locations in candidate feed tanks is limited by the availability of tank risers providing access into the tank. Generally, only a few risers in each tank are actually available for sampling because the risers are dedicated to instrumentation or other uses. Sampling within a vertical column is generally limited only by the depth of waste in the tank.

Riser selection is determined using best professional judgment. Previous waste feed tank sampling campaigns used two or more risers, and showed that negligible lateral variability exists in the DST System waste supernatants; therefore, only one riser will be used. Sample depths are determined depending on whether layering is suspected to exist and applying the requirements given in Table 3.3.

3.10.1.2 Candidate Feed Tank Sampling Quality Assurance and Quality Control

For each candidate feed tank waste sample, a sample solution is drawn from the sample riser using one or more sample bottles. Sample bottles are precleaned, amber-colored glass bottles sealed with Teflon* caps or septum caps. The exceptions to the sample bottle requirements are: a clear bottle is used for the surface sample to determine the existence of separable organics and the bottle for VOA analysis must be sealed with a septum cap.

For candidate feed tank sampling quality control, one field blank, consisting of one or more sample bottles, is taken during the sample event. Field blanks are inserted at least 1-foot into the head space through the sample riser used during the sample event. One trip blank, also consisting of one or more sample bottles, is taken during each sample event. Trip blanks are analyzed as independent samples for VOA. Field and trip blanks use the same types of sample bottles as the actual samples and are filled with reagent-grade water before shipment to the field.

Preservatives are not used with candidate feed tank samples because of concerns with high radiation exposure that would result from additional handling of sample solutions. It is not practical to refrigerate the bulky, shielded sample pigs and shipping containers. Biological activity, generally the largest problem in environmental samples, is unlikely in candidate feed tank samples because of the high salt content, pH, and radioactivity of the sample.

The chain of custody is documented on a data sheet that includes a unique sample number, date and time sample was taken, custody seal number, and signature of the sampler. When possession of the sample is transferred to other persons, such as the shipper or laboratory, the signature of the relinquisher and receiver are recorded, along with date and time of the transfer. The receiver at the laboratory also documents on the data sheet that the sample seal number is correct and the seal is intact. The chain-of-custody data sheets are included in the operating record.

*Teflon is a trademark of E.I. DuPont de Nemours & Company

3.10.1.3 Deviations from Specified Sampling Practices

The WAP requires ASTM E 300 'bottle on a string procedure' for sampling (ASTM E300-86). Due to high radiation fields, some deviations to the standard have been necessary to implement safely the sampling practices in the field. These deviations are documented below.

- Requirement: The sampling apparatus be filled and allowed to drain before drawing the sample.

  Deviation: Sampling personnel lowers the sampling apparatus to the specified level and collects the sample. To pour the contents out and resample would encourage the spread of radiological contamination and additional whole body and extremity radiation exposure.

- Requirement: Bottles and jars may be made of clear or brown glass or polyethylene with necks shaped to receive glass stopper or a screw cap made of metal or plastic material.

  Deviation: Sampling personnel uses clear or amber glass with necks shaped to receive rubber stoppers. Glass stoppers were used at one time but resulted in broken sample bottles during the removal of the glass stoppers from the glass bottles.

- Requirement: Stopper and label bottles immediately after taking the samples and deliver them to the laboratory.

  Deviation: Sampling personnel screws on the bottle cap after the sample has been collected. Because of the alkalinity of the tank waste sample labels will not stay on bottles after samples are collected. Therefore, sample bottles are etched with the sample numbers before the samples are collected. The samples are shipped to the laboratory as soon as resources are available, within three days of sample collection.

- Requirement: Select wiping cloths so that lint is not introduced, contaminating the samples.

  Deviation: Sampling personnel uses damp cotton towels to wipe down sample bottles after the sample bottles have been capped. The intent is to remove any waste that may have been deposited on the bottle during the sampling event to minimize contamination and personnel exposure.

- Requirement: To prevent the loss of the liquid during shipment and to protect against moisture and dust, cover the closure of the glass bottle with plastic caps, which have been swelled in water, wiped dry, placed over the top of the stoppered bottle, and allowed to shrink tightly in place. Screw-top bottles are recommended. The cap should be lined with material inert to the sample. The screw caps should be secured by use of adhesive tape or similar material.

  Deviation: Sampling personnel uses screw caps and 4-mil plastic bags. The cap is Teflon-lined which is inert to the sample. The sample bottle is placed inside a plastic bag, which is placed inside a steel pig (or sample pig). The steel pig is placed inside a shipping pig. The screw cap is not secured with adhesive tape. Securing the sample bottle caps with tape would present the laboratory with difficulty of removing the caps remotely (in the hot cell). If the sample leaks from the sample bottle, it is trapped in the plastic bag. The custody seal is placed on the shipping pig per procedure.

- Requirement: All sampling apparatus and closures shall be clean, dry, free of contaminants, and constructed of materials that are inert to the product to be sampled.

  Deviation: Prior to sampling, sampling equipment such as the sample holder shall be cleaned using a procedure that is consistent with SW-846, *Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods*, sampling equipment cleaning protocol. The bottles with screw caps are washed and certified and are not opened until at the time of the sampling event. The bottles are opened when the previous sample is completed so that only one bottle is opened at the time of sampling to insert the rubber stopper from the sample holder. The stopper and bottles are constructed from materials that are inert to the product to be sampled.

3.10.1.4 Process Condensate Sample Collection

Process condensate samples, when performed at 242-A Evaporator instead of LERF, are taken from the process condensate transfer line in the condenser room of the 242-A Building. Grab sampling is performed during the campaign at the SAMP-RC3-2 sampler or other sample port by opening a valve and allowing a small volume of process condensate to flush valve and line/piping. The required volume of sample is collected into labeled bottles and chain of custody is maintained. Samples of process condensate are collected in a manner to produce a representative sample. Testing methods are used consistent with SW-846 procedures as listed in Table 3.4.

3.10.1.5 Process Condensate Sampling Quality Assurance and Quality Control

For information on process condensate sample collection, including the number and types of sample bottles, sampling QA/QC, etc., refer to the Permit, Part III, LERF and 200 Area ETF unit-specific conditions and Chapter 3.0, Waste Analysis Plan.

3.10.2 Analyte Selection and Rationale

The DQO analysis for the 242-A Evaporator examined the data needs for sampling the candidate feed tanks and determined that the analyses in Table 3.4 should be conducted to satisfy WAC 173-303-300 requirements. Table 3.4 also contains the rationale for these parameters being selected. Section 3.7 provides additional detail on the rationale.

For information on process condensate sample analyte selection and rationale, refer to the Permit, Part III, LERF and 200 Area ETF unit-specific conditions and Chapter 3.0, Waste Analysis Plan.

Table 3.3. Candidate Feed Tank Sample Point Selection.

Number of Samples	Location of Sample Points
Four samples, no layering suspected	One surface sample to address the potential for a separable organic layer and three subsurface samples: one sample each obtained from the upper third (near the half way point), one sample in the middle third and one sample in the lower third (near the lower limit) of the supernatant layer.
Four samples, layering suspected	One sample taken from the waste surface to address the potential for a separable organic layer. Three samples targeting the expected midpoint of the suspected layers. If more than three layers are suspected, The larger layers have sampling priority.

Table 3.4. Analytes for Candidate Feed Tanks

Parameter	Test technique	Analyte (CAS#)	Rationale
Exotherm	Differential scanning calorimeter	Temperature and energy	Verify the waste will not undergo an exothermic reaction (Section 3.9.1.1).
Compatibility test	Mixing and compatibility study	Visual physical changes	Verify the waste is chemically compatible (Section 3.9.1.2).
Separable Organics	Visual Inspection	Visual Inspection	Process control information needed to evaluate campaign parameters and status.(Section 3.9.1.3)
	TGA OR Carbon coulometric detector	Percent Water OR Total carbon, Total Inorganic carbon	Verify surface sample is not a single layer of homogeneous liquid (Section 3.9.1.3)
Organic compounds	Gas chromatograph/ mass spectrometer	Acetone (67-64-1), 1-Butanol (71-36-3), 2-Butoxyethanol (111-76-2), 2-Butanone (78-93-3), Tri-butyl phosphate (126-73-8)	Used in calculations to verify that vessel vent emissions will not exceed regulatory limits and to prevent compatibility problems with the LERF liner (Section 3.9.1.4).
	Carbon coulometric detector	Total carbon, Total inorganic carbon	Used in calculations to verify that vessel vent emissions will not exceed regulatory limits and to prevent compatibility problems with the LERF liner (Section 3.9.1.4).
Ammonia	Ion selective electrode or Ion chromatography	Ammonia (7664-41-7)	To prevent compatibility problems with the LERF liner (Section 3.9.1.4).

CAS#=Chemical Abstract Service Number
LERF=Liquid Effluent Retention Facility
TGA = Thermogravimetric analysis

3.11 Analytical Methods and Quality Assurance and Quality Control

This section provides information on the analytical methods and QA/QC for candidate feed tank samples, including discussions concerning laboratory selection and analytical methods. For information on process condensate analytical methods and QA/QC, refer to the Permit, Part III, LERF and 200 Area ETF unit-specific conditions and Chapter 3.0, Waste Analysis Plan.

3.11.1 Laboratory Selection

Because of the nature of the samples, it is anticipated that candidate feed tank waste sample testing will be conducted at the 222-S Laboratory Complex. Other laboratories at the Hanford Facility could be used provided they are equipped to handle such samples. Laboratory selection depends on availability, analytical needs, and the ability of the laboratory to meet Permit and quality assurance requirements.

3.11.2 Analytical Methods

The analytical methods that must be followed for testing candidate feed tanks are included in Table 3.5. Performance-based specifications rather than procedure-based specifications are used for determining the appropriate analytical methods. This allows for necessary adjustments to the methods for Hanford Facility-specific issues; related to high radioactivity of the sample matrix, while ensuring acceptable data quality. Because of the high radioactivity, the analytical method will in some cases deviate from those in national standards such as *Test Methods For Evaluating Solid Waste*, SW-846 (EPA 1986) and *Standard Methods for the Examination of Water and Waste Water* (AWWA 2005).

3.11.3 Laboratory Quality Assurance and Quality Control

Candidate feed tank waste testing and sampling methods conducted as part of this plan must meet the data quality requirements contained in Table 3.6 to be considered acceptable for decision-making purposes. Quality control check samples (i.e., calibration samples and/or laboratory control samples) generally are performed once per sample event (e.g., once for all samples from one candidate feed tank). Matrix spike and duplicate analysis are performed once per sample event for all methods except differential scanning calorimetry (DSC). A duplicate analysis is performed for DSC analysis to determine method precision. Accuracy for DSC is evaluated by using the laboratory control standard.

The QA/QC program for sampling and analysis related to this unit must, at a minimum, comply with the applicable regulatory requirements. All analytical data will be defensible and will be traceable to specific, related quality control samples and calibrations.

1 **Table 3.5. Analytical Methods for Candidate Feed Tank Stream Analytes.**

Category	Analyte	Performance-based Analytical Methods	Method
Organics	Acetone 1-Butanol 2-Butanone	Purge and trap and GC/MS (VOA)	SW-846 Method 8260
	2-Butoxyethanol Tri-butyl Phosphate	Solvent extraction and GC/MS (semi-VOA)	SW-846 Method 3520B and 8270A
Inorganic	Ammonia	Ion selective electrode and Micro-distillation Ion Chromatography	AWWA Method 4500-NH3 and EPA method 300.7
Other	Exotherm	Differential scanning calorimeter	A sample is placed in the DSC unit and heated to 500° C (932° F). The differential heat flow between the sample and a reference pan is monitored by thermocouples.
	Mixing and compatibility study	Lab specific	Representative samples of each candidate feed tank are mixed and visually checked for gas evolution, heat generation, precipitation, dissolution of solids, color change, clarity, and any other observable characteristics.
	Separable Organics	TGA OR Carbon coulometric detector	A small subsample (typically about 20 mg) is heated to approximately 500° C (932° F). The percent weight loss in the boiling range of water is reported as sample percent water. OR Coulometry: ASTM 5310
	Total carbon	Combustion with IC_T/C_T coulometric detection OR Persulfate oxidation with IC_T/TOC coulometric detection	Combustion and persulfate treatment: AWWA Method 5310 Coulometry: ASTM 5310
	Total Inorganic Carbon	Acidification with IC_T/TOC coulometric detection	Acidification: AWWA Method 5310. Coulometry: ASTM 5310

ASTM=American Society of Testing and Materials
AWWA=American Water Works Association
GC/MS=Gas Chromatograph/Mass Spectrometer
IC_T= Total Inorganic Carbon
TGA= Thermogravimetric analysis
TOC=Total Organic Carbon
VOA= Volatile Organic Analysis

2

Table 3.6. Quality Assurance Requirements for Candidate Feed Tank Stream Analytes

Category	Analyte	Estimated quantitation limit (matrix specific)	Precision (RPD between duplicates), %	Accuracy (recovery of matrix spike), %	Action level [1]
Organics	Acetone	28 mg/L	<25	40-110	> 87 mg/L[2]
	1-Butanol	20 mg/L	<25	30-110	> 226 mg/L[2]
	2-Butoxyethanol	30 mg/L	<25	30-110	> 95.2 mg/L[2]
	2-Butanone (methyl ethyl ketone)	18 mg/L	<25	40-110	> 58 mg/L[2]
	Tri-butyl phosphate	50 mg/L	<25	40-125	> 1.015E+4 mg/L[2]
Inorganic	Ammonia	400 ug/ml	<20	75-125	> 50,000 mg/L
Other	Exotherm	None	<20[3]	Not applicable [3]	< 168 EC or absolute value of ratio of exotherm to endotherm > 1
	Mixing and compatibility study	Not applicable	Not Applicable	Not Applicable	Visual: unusual changes in color, temperature, clarity, etc.
	Total carbon	25 ug/mL	<20	75-125	C_T-IC_T > 87 mg/L
	Total inorganic carbon	25 ug/mL	<20	75-125	C_T-IC_T > 87 mg/L

1=In deriving the action levels, the ratio of feed flow rate to slurry flow rate (R) is assumed to be 2.

2=For organic species limits, sum of the fractions rule apply (refer Table 3.2). Total carbon and total inorganic carbon are not included in the summation of organics.

3=Precision for this method is evaluated by the deviation between sample (unspiked) and sample replicate. Accuracy for DSC is evaluated by using the laboratory control standard.

RPD - relative percent difference C_T - total carbon IC_T - total inorganic carbon

mg/L - milligram per liter ug/L - microgram per liter

3.12 References

ASTM, 1986, *Standard Practice for Sampling Industrial Chemicals*, ASTM E300-86, American Society for Testing and Materials, West Conshohocken, Pennsylvania, updated periodically.

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AWWA, 2005, *Standard Methods for the Examination of Water and Wastewater*, 17th edition, American Public Health Association/America Water Works Association, Washington, D.C., updated periodically.

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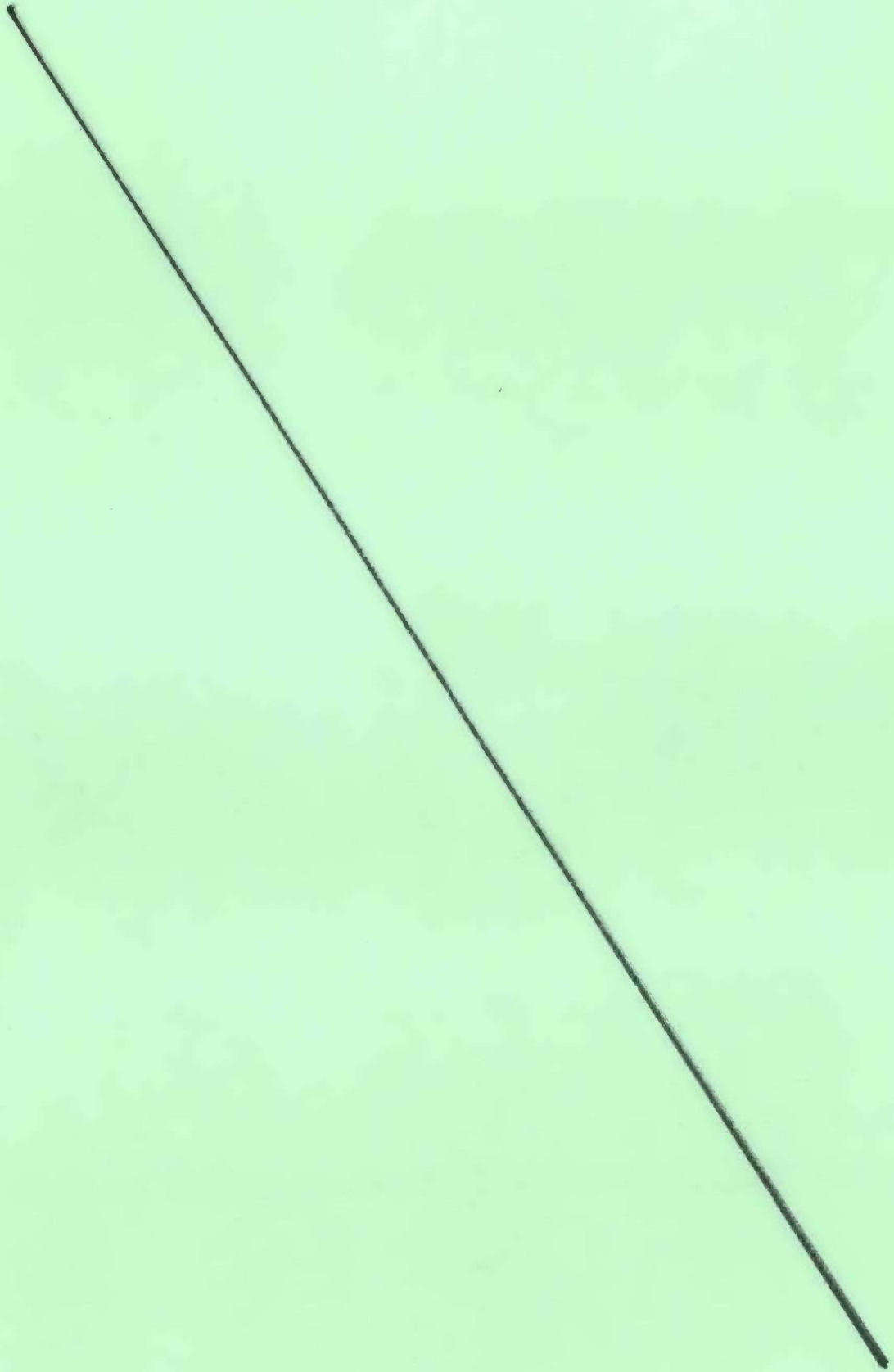
EPA, 1986, *Test Methods for Evaluating Solid Waste Physical/Chemical Methods*, SW-846, U.S. Environmental Protection Agency, Washington, D.C., updated periodically.

EPA, 1994a, *Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes, A Guidance Manual*, PB94-963603, OSWER 9938.4-03, U.S. Environmental Protection Agency, Washington D.C.



CHAPTER 4.0
PROCESS INFORMATION

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4.0 PROCESS INFORMATION

Where information regarding treatment, management, and disposal of the radioactive source byproduct material and/or special nuclear components of mixed waste (as defined by the Atomic Energy Act of 1954 as amended) has been incorporated into this document, it is not incorporated for the purpose of regulating the radiation hazards of such components under the authority of this permit or chapter 70.105 RCW and its implementing regulations but is provided for information purposes only.

The 242-A Evaporator receives mixed waste from the Double-Shell Tank (DST) System that contains inorganic and organic constituents and radionuclides. A 242-A Evaporator simplified process flow diagram is given in Figure 4.1. The 242-A Evaporator separates the mixed waste received from the DST System, generating the following waste streams:

- A concentrated aqueous waste stream (slurry) containing the nonvolatile components, including most of the radionuclides, inorganic constituents, and nonvolatile organics such as tri-butyl phosphate
- A dilute aqueous waste stream (process condensate) containing the volatile components, primarily water with low concentrations of radionuclides, inorganic constituents, and volatile constituents such as ammonia and acetone.

The slurry is routed back to the DST System pending further treatment. The process condensate is transferred to the Liquid Effluent Retention Facility (LERF) for storage until processed through the Effluent Treatment Facility (ETF).

The 242-A Evaporator process employs a conventional forced circulation, vacuum evaporation system to concentrate the DST System waste solution. The major components of this system include the reboiler, vapor-liquid separator, recirculation pump and pipe loop, slurry product pump, condenser, jet vacuum system, and condensate collection tank

The vapor-liquid separator, C-A-1, also called the evaporator vessel, and the condensate collection tank, C-100, meet the definition of a tank in WAC 173-303-040. Other process equipment associated with these tank systems is considered ancillary equipment. Drawings that aid in understanding the systems are provided in Section 4.3.

The 242-A Evaporator receives waste from a DST System tank, 241-AW-102 that serves as the 242-A Evaporator feed tank. The feed enters the recirculation line and blends with the main process slurry stream, which is pumped to the reboiler.

In the reboiler, the mixture is heated to the specified operating temperature, normally 38 to 77EC, using 21 to 69 kilopascals gauge pressure steam. The low-pressure steam provides adequate heat input, and the resulting low-temperature differential across the reboiler minimizes scale formation on the heat transfer surfaces. The static pressure of the waste in the reboiler is sufficient to suppress the boiling point so the waste does not boil in the reboiler tubes. Boiling occurs only near or at the liquid surface in the vapor liquid separator.

The heated slurry stream is discharged from the reboiler to the vapor-liquid separator (C-A-1) that typically is maintained at an absolute pressure of 5.3 to 10.7 kilopascals. Under this reduced pressure, a fraction of the water in the heated slurry flashes to steam and the steam is drawn through two, wire mesh deentrainer pads into a 42-inch diameter vapor line that leads to the primary condenser, leaving behind a more concentrated slurry solution in the vapor-liquid separator.

After a brief residence time in the vapor-liquid separator, the slurry exits from the bottom through the lower portion of the recirculation line and is recirculated by the recirculation pump (P-B-1). The pump discharges the slurry back to the reboiler via the upper portion of the recirculation line, thus completing the recirculation loop.

The specific gravity of the waste liquid is monitored closely to ensure that the target density, established before the beginning of the campaign, is not exceeded.

A portion of the slurry is removed from the upper portion of the recirculation line using the slurry pump (P-B-2) and transferred through an encased underground pipeline (pipe-within-a-pipe) to a designated slurry receiver tank in the DST System.

The vapors are drawn from the vapor-liquid separator, through a 42-inch diameter vapor line and enter a series of three condensers, where the vapors are condensed using raw water. The condensed vapors, called process condensate, are collected in tank C-100. Steam jets are used to create a vacuum on the vapor liquid separator drawing the process vapors into and through the condensers. Noncondensable vapors are drawn from the condensers, then through a series of particulate filters and vented to the atmosphere. The air discharges are monitored continuously when the 242-A Evaporator is operating to verify that standards for radionuclide and ammonia emissions standards are met.

Process condensate contains the volatile constituents of the waste and trace quantities of inorganic materials and radionuclides. The process condensate is pumped from tank C-100 through an encased underground pipeline (pipe-within-a-pipe) to the LERF.

During a campaign, the evaporation process is continuous with typical feed flow rates of 260 to 450 liters per minute, process condensate flow rates of 150 to 230 liters per minute, and slurry flow rates of 110 to 230 liters per minute. The evaporator process is shutdown when the desired endpoint concentration of the slurry is met. Endpoints are established at the beginning of the campaign, based on the target specific gravity of the waste, or allowable waste volume reduction (WVR) and defined operating limits. If the evaporation rate cannot achieve the desired endpoint, slurry in the DST System serving as the slurry receiver is transferred to the feed tank for one or more passes through the 242-A Evaporator. At the end of each campaign, the 242-A Evaporator process equipment is shutdown, emptied, flushed with raw water, and placed in a safe standby mode.

Other discharges during 242-A Evaporator processing include condensate from the steam used to heat the waste and cooling water used to condense the vapors. The 242-A Evaporator is designed to prevent contamination of these streams. The fluids on the uncontaminated side of the heat exchangers are maintained at a higher pressure than the waste stream so that uncontaminated fluid migrates toward the contaminated waste if a leak were to occur. The steam condensate and the cooling water are monitored continuously for radiation, pH, conductivity, and discharged to the Treated Effluent Disposal Facility (TEDF) as long as none of the discharge limits are exceeded. The steam condensate and cooling water streams were assessed in the stream specific reports (WHC 1990a and WHC 1990b) and are not dangerous waste in accordance with WAC 173-303.

The 242-A Evaporator process is controlled by the MCS. The MCS computer monitors process parameters and controls the parameters where required. Once the configuration parameters and other process control inputs are set, the MCS maintains the process parameters within specified ranges by sending output signals that operate specific pieces of equipment (e.g., control valves).

4.1 Tank Systems

This section discusses information associated with design requirements, integrity assessments, and any additional requirements for tanks used to treat and store mixed waste in the 242-A Evaporator.

4.1.1 Design Requirements

The following design requirements were addressed in the 242-A Evaporator/Crystallizer Tank System Integrity Assessment Report (IAR) (Appendix 4B):

- Minimum design wall thicknesses and measured wall thicknesses at various points throughout the tank systems.
- Design standards used in construction, including references.
- Waste characteristics.

- Materials of construction and compatibility of materials with the waste being processed.
- Corrosion protection.
- Seismic design basis evaluation.

The conclusion of the integrity assessment report is that the 242-A Evaporator system is not leaking and is fit for use. The inspections, tests, and analyses performed provide assurance that the tank system has adequate design, sufficient structural strength, and sufficient compatibility with the waste to not collapse, rupture, or fail during operation. The report also states that a review of construction files indicates that the building structure was designed and constructed to withstand a design-basis earthquake.

4.1.2 PC-5000 Transfer Line

Process condensate from the 242-A Evaporator is transferred to the LERF using a pump located in the 242-A Evaporator and approximately 1,500 meters of pipe, consisting of a 3-inch carrier pipe within a 6-inch outer containment pipeline. Flow through the pump is controlled through a valve at flow rates from 150 to 300 liters per minute.

The encased fiberglass transfer line (PC-5000) exits the 242-A Evaporator below grade and remains below grade at a minimum 1.2-meter depth for freeze protection, until the pipeline emerges at the LERF catch basin, at the corner of each basin. All piping at the catch basin that is less than 1.2 meters below grade is wrapped with electric heat tracing tape and insulated for protection from freezing. Additional detail including information on secondary containment, leak detection and integrity assessment for this line is provided in § 4.1.6.3.3 and §4.1.4.1.

4.1.3 Vapor-Liquid Separator (C-A-1) and Ancillary Equipment

The following sections describe the vapor-liquid separator (C-A-1) and ancillary equipment.

Waste Feed System. Feed to the 242-A Evaporator is supplied via a pump located in the 241-AW-102 feed tank. The feed pump transfers the waste to the 242-A Evaporator through a 3-inch diameter carbon steel transfer pipeline encased in a 6-inch diameter carbon steel pipe to provide secondary containment. The feed pipeline is equipped with a leak detection system.

Waste feed will be sampled from 241-AW-102 or identified candidate feed tanks as described in the Waste Analysis Plan. The feed sampler (SAMP-F-1) located in a sample enclosure located in the hot equipment storage room has been isolated and blanked, and will be closed in accordance with the approved Closure Plan.

Evaporator Process Loop. The 242-A Evaporator process loop equipment components are as follows:

- Reboiler (E-A-1)
- Vapor-liquid separator (C-A-1)
- Recirculation pump (P-B-1)
- Recirculation loop

Figure 4.2 is a simplified process flow diagram showing the major components of the process loop.

Reboiler (E-A-1). Waste is heated as the waste passes through the reboiler before entering the vapor-liquid separator. The reboiler is a vertical tube unit with steam on the shell-side and process solution on the tube-side. The 364 tubes in the reboiler are enclosed in a 1.03-meter outside diameter, 4.6-meter-long stainless steel shell. Both the reboiler shell and tubes are constructed of 304L stainless steel. The shell is 0.64 centimeter thick and the tubes are 14-gauge steel. The reboiler is designed to distribute steam evenly and to prevent tube damage from water droplets that may be present in the steam.

Vapor-Liquid Separator (C-A-1). Process solution from the reboiler enters the vapor-liquid separator via the upper recirculation line. Some of the solution flashes into vapor, which exits through a vapor line at the top of the vapor-liquid separator. The remaining solution (slurry) exits through the recirculation line at the bottom.

The separator consists of a lower and upper section. The lower (liquid) section is a stainless steel shell 4.3 meters in diameter having an 85,200 to 94,600 liter normal operating capacity (including recirculation loop and reboiler). The maximum design capacity is 103,000 liters. The upper (vapor) section is a stainless steel shell 3.5 meters in diameter containing two deentrainment pads. These wire mesh pads remove liquids and solids that entrain into the vapor section of the vessel. Spray nozzles, using recycled process condensate or filtered raw water, wash collected solids from the deentrainment pads and vessel walls. Both sections of the vapor-liquid separator are constructed of 0.95-centimeter-thick stainless steel.

Operating parameters in the vapor-liquid separator are monitored to provide an indication of process problems such as slurry foaming, deentrainer flooding, or excessive vapor temperatures. Instrumentation also is available to monitor the liquid levels in the vapor-liquid separator. Interlocks are activated when high pressures or high- or low-liquid levels are detected, shutting down the evaporation process and placing the facility in a safe configuration.

The vapor-liquid separator and recirculation loop can be flushed to remove any residual solids from the system and/or to reduce radiation levels. The most common flush solution is water, but dilute nitric or citric acid solutions could be used. All acidic flush solutions are chemically adjusted to meet DST acceptance criteria before transfer to the DST System. Antifoam solution is added (at very low flow rates - approximately 0.04 to 0.4 liters per minute) to the vessel to prevent foaming. The antifoam solution is a noncorrosive, nonregulated silicone-based solution that is compatible with the evaporator components.

Recirculation Pump. The stainless steel recirculation pump (P-B-1), is constructed as part of the recirculation loop to the reboiler. The 28-inch diameter axial flow pump has 60,900 liters per minute output. The recirculation pump is designed to handle slurry up to 30 percent undissolved solids by volume at specific gravities up to 1.8. The recirculation pump moves waste at high velocities through the reboiler to improve heat transfer, keep solids in suspension, and reduce fouling of the heat transfer surfaces.

The recirculation pump is equipped with shaft seals with high-pressure recycled process condensate (or water) introduced between the seals to prevent the waste solution from leaking out of the system. Seal water pressure and flow are monitored and controlled to shut down the recirculation pump if conditions are not adequate to prevent waste liquid from migrating into the seal water. The used seal water is routed to the feed tank.

Recirculation Loop. The recirculation loop consists of a 28-inch diameter stainless steel pipe that connects the vapor-liquid separator to the recirculation pump and reboiler. The lower loop runs from the bottom of the vapor-liquid separator to the recirculation pump inlet. The upper loop connects the pump discharge to the reboiler and the reboiler to the vapor-liquid separator. The feed line from the feed tank and the slurry line to underground storage tanks are connected to the upper recirculation line.

Slurry System. The slurry system draws a portion of the concentrated waste from the upper recirculation loop and transfers it to the DST System. The major components of the slurry system are the slurry pump and the slurry transfer pipelines. Figure 4.3 shows a simplified flow diagram of the slurry system. These components are described in the following paragraphs.

The slurry pump (P-B-2) is used to transfer slurry from the recirculation loop to the underground storage tanks. The pump is driven by a variable speed motor and is constructed of 304L stainless steel. The slurry pump is designed to generate high pressures to alleviate the possibility of a transfer line plugging.

Interlocks control the operation of the slurry pump. The slurry pump (P-B-2) is shutdown if any of the following occur:

- Excessive pressure is detected in the slurry lines to 241-AW Tank Farm.
- A leak is detected in the slurry transfer lines secondary containment.
- A leak is detected in the 241-AW Tank Farm process pits where the transfer lines enter the DST System.

The slurry pump uses a shaft seal with recycled process condensate (or water) and pressure and flow controls similar to the system described above for the recirculation pump.

Transfer pipelines are 2-inch diameter, carbon steel encased lines which route slurry to a designated underground DST within the 200 East Area. All transfer pipelines are encased in a secondary containment pipe and equipped with leak detectors between the primary and encasement piping. The pipelines are sloped to drain to the valve pit. The detection of any leak by the automated leak detection system shuts off the slurry pump. In lieu of the MCS automated shutdown, the slurry pump (P-B-2) can be manually shutdown at the direction of the Shift manager or 242-A Evaporator Control Room operator if a leak occurs.

The flow rate of the slurry transfer to the DST System is monitored and a decrease in flow below a specified value automatically will shut down the slurry pump (P-B-2) and initiate a line flush with water. The objective of flushing the transfer line is to prevent settling of solids, which precludes plugging the slurry transfer lines.

Samples can be taken from the slurry line when needed via a sampler (SAMP-F-2) that is located near the feed sampler in the load out and hot equipment storage room.

4.1.3.1 Condensate Collection Tank (C-100) and Ancillary Equipment

The following section discusses the condensate collection tank (C-100) and ancillary equipment. This equipment collects process condensate via the condensers in the vacuum condenser system, filters the condensate, and pumps the process condensate to LERF. Figure 4.4 provides a simplified process flow diagram showing the major components of the process condensate system. The following major components make up the process condensate system:

- Vacuum condenser system
- Condensate collection tank (C-100)
- Process condensate pump (P-C-100)
- Condensate filters (F-C-1, F-C-2, and F-C-3)
- Process condensate radiation monitoring, sampling system and diversion system (RC3)
- Seal pot
- Process condensate recycle system
- Vessel Vent System

Vacuum Condenser System. Vapors removed from the vapor-liquid separator flow to a series of three condensers where the vapors are condensed using raw water. Condensate drains to the condensate collection tank (C-100). The vacuum condenser system consists of the following major components:

- Primary condenser (E-C-1)
- Intercondenser (E-C-2)
- Aftercondenser (E-C-3)
- Steam jet ejectors (J-EC1-1 and J-EC2-2)

Figure 4.5 provides a simplified process flow diagram showing the major components of the vacuum condenser system. These system components are discussed in the following sections.

Primary Condenser (E-C-1). Vapors drawn from the vapor-liquid separator flow through the 42-inch (3.5 feet) vapor line, into the E-C-1 condenser where the majority of the condensation takes place. Noncondensed vapors exit to the intercondenser (E-C-2) while the condensed vapors (process condensate) drain to the condensate collection tank (C-100). Cooling water passes through the cooling tubes and exits to TEDF.

The carbon steel condenser shell measures approximately 5.3 meters (17.4 feet) long and has a 2.2-meter (7.2 feet) inside diameter. The condenser consists of 2,950 equally spaced carbon steel tubes that are 3.6 meters (11.8 feet) long with a 1.9-centimeter (0.75 inches) outside diameter.

Intercondenser (E-C-2). Noncondensed vapors from E-C-1 enter the intercondenser. The vapor stream contacts the cooling tubes in the condenser where cooling water provides additional condensation. The condensate drains to the condensate collection tank (C-100). Noncondensed vapors and used cooling water are routed to the after condenser.

The carbon steel intercondenser measures 2.2 meters (7.2 feet) long with a 0.39 meter (1.3 feet) inside diameter. This heat exchanger contains 144 tubes that are 1.7 meters (5.6 feet) long with a 1.9-centimeter (0.75 inches) outside diameter.

After condenser (E-C-3). Vapor discharged from the intercondenser enters the after condenser. Cooling is supplied to the after condenser by the cooling water from the intercondenser. Condensate is routed to the condensate collection tank (C-100), while the noncondensed vapors are filtered, monitored, and discharged to the atmosphere through the vessel ventilation system. The cooling water is discharged to TEDF.

The carbon steel after condenser measures 2.3 meters (7.5 feet) long and has a 0.20-meter (0.66 feet) inside diameter. This heat exchanger contains 45 tubes that are 1.8 meters (5.9 feet) long with a 1.9-centimeter (0.75 inches) outside diameter.

Steam Jet Ejectors. The vacuum that draws the vapors from C-A-1 into the condensers is created by a two-stage steam jet ejector system. The first-stage jet ejector (J-EC1-1) maintains a vacuum on the primary condenser, which in turn creates a vacuum on the vapor-liquid separator. The ejector consists of a steam jet, pressure controller, and air bleed-in valve. Steam and noncondensed vapors from the primary condenser are ejected from J-EC1-1 into the intercondenser. The desired vacuum is obtained by controlling steam pressure and bleeding ambient air as necessary into the vapor header through an air intake filter. The second-stage jet ejector (J-EC2-1) creates the vacuum that moves vapors from the intercondenser through the after condenser.

Condensate Collection Tank (C-100). Process condensate from the primary condenser, intercondenser, after condenser, and the vessel ventilation system drain to the condensate collection tank (C-100). The tank is 4.3 meters in diameter, 5.8 meters high, and is constructed of 0.79-centimeter (0.31 inches)-thick stainless steel. The tank has a maximum design capacity of 67,400 liters (17,805 gallons). Normal operating volume is approximately 50 percent of the tank capacity. A carbon steel base supports the tank. An agitator is installed but not used.

In the event of a tank overflow, the solution is routed through an overflow line to the drain system, which returns waste to the feed tank (241-AW-102). Overflow occurs when the volume exceeds about 60,600 liters. The overflow line is equipped with a liquid filled trap to isolate the drain system from the tank.

Process feed samples are evaluated for the presence of a separate organic layer and process controls are used to reduce the risk of the condensate collection tank to receive small amounts of immiscible organics with the condensed waste. If detected, the organic layer is removed by overflowing tank C-100 back to the feed tank 241-AW-102. The liquid level in the tank is controlled well above the discharge pump intake point and a controlled overflow is conducted upon completion of each processing cycle (campaign) to ensure that an organic layer does not accumulate and cannot be pumped to LERF.

Process Condensate Pump. A pump (P-C-100) moves the process condensate from tank C-100 through the condensate filter to LERF. The process condensate pump is a centrifugal pump constructed of 316 stainless steel.

Condensate Filters. After leaving the condensate collection tank, the process condensate is filtered to remove solids. The primary condensate filter (F-C-1) has a welded steel housing. A second filter system (F-C-3), installed downstream is also used to filter the process condensate.

This system has duplex in-line filters in cast iron housing. Both filters employ a filter material that is compatible with the process condensate.

Process Condensate Radiation Monitoring, Sampling and Diversion System. The process condensate transferred to LERF is monitored continuously for radiation. If radiation levels exceed established limits, an alarm is received and interlocks immediately divert the stream back to the condensate collection tank (or the feed tank) and shut off the process condensate pump. This ensures process condensate containing excessive radionuclides due to an accidental carryover from the vapor-liquid separator is not transferred to LERF.

Seal Pot. The condensate collection tank receives condensed liquids from the vessel ventilation system. A seal pot collects the drainage before discharge into the condensate collection tank and isolates the tank from the vessel ventilation system.

Condensate Recycle System. For waste minimization, a portion of the process condensate from tank C-100 is recycled for use as decontamination solution for the deentrainment pad sprays and seal water for the recirculation pump (P-B-1) and slurry pump (P-B-2). Use of process condensate instead of raw water results in approximately 10 percent reduction in waste volume generated during continuous operation of the 242-A Evaporator. Filtered raw water also is available as a backup for sprays and seal water. A 2-inch (5.1 centimeters) diameter carbon steel line, stainless steel centrifugal pump (P-C106), and filters (F-C-5 and F-C-6) supply process condensate from tank C-100 to the pad sprays and pump seals. The filters are disposable cartridge filters in carbon steel housings arranged in parallel with one filter in service while the other is in standby.

4.1.4 Integrity Assessments

The integrity assessment report (Appendix 4B, Integrity Assessment Report) discusses:

- The standards used during design and construction of the 242-A Evaporator and the adequacy of those standards.
- The characteristics of the DST waste processed.
- The adequacy of the materials of construction to provide corrosion protection from the waste processed.
- The age of the tanks and the affect of age on tank integrity.
- The results of the leak tests, visual inspections, and tank wall thickness inspections.
- The frequency and scope of future integrity assessment.
- Deficiencies in secondary containment design. These deficiencies are discussed in-the integrity assessment report.

An independent, qualified, registered professional engineer certified the integrity assessment.

The inspections, tests, and analyses performed provide assurance that the 242-A Evaporator tank system has adequate design, sufficient structural strength, and sufficient compatibility with the waste to not collapse, rupture, or fail during operation. No evidence of degradation was noted during the visual test, ultrasonic test, or leak test. Both condensate collection tank C-100 and the vapor-liquid separator/reboiler loop passed leak tests. The frequency of subsequent integrity assessments has been established at every 10 years. This frequency is based on the results of the 1998 integrity assessment.

4.1.4.1 PC-5000

An integrity assessment for PC-5000 was performed, including a hydrostatic leak/pressure test at 10.5 kilograms per square centimeter gauge (150 pounds per square inch). A statement by an independent, qualified, registered professional engineer attesting to the integrity of the piping system is included in *Integrity Assessment Report for the 242-A Evaporator/LERF Waste Transfer Piping, Project W105* (WHC 1993), along with the results of the leak/pressure test. The next integrity assessment for PC-5000 will be conducted in the calendar year 2008.

The schedule for conducting integrity assessments will be at a frequency of every 10 (calendar) years unless otherwise required by an Independent Qualified Registered Professional Engineer (IQRPE) or as required for system repairs and upgrades. All integrity assessments will be conducted in accordance with WAC 173-303-640.

4.1.5 Additional Requirements for Existing Tanks

Refer to information in Section 4.1.2 and the integrity assessment report, which includes measuring tank wall thicknesses, evaluating corrosion protection, and performing leak tests.

4.1.6 Secondary Containment and Release Detection for Tank Systems

This section describes the design and operation of secondary containment sumps, drain lines, and leak detection systems for the 242-A Evaporator.

4.1.6.1 Requirements for All Tank Systems

The Construction Specification for 242-A Evaporator-Crystallizer Facilities Project B-100 (Vitro 1974) was used during preparation, design, and construction of the tank and secondary containment systems. The integrity assessment report details how the construction specification relates to the national codes and standards.

Constructing the building and vessels per this specification ensures that foundations are capable of supporting tank and secondary containment systems and that uneven settling and failures from pressure gradients do not occur. The integrity assessment report (Appendix 4B) states that the 242-A Evaporator has adequate design, sufficient structural strength, and sufficient compatibility with the wastes to not collapse, rupture, or fail during service loads associated with normal operations and that the building structure was designed and constructed to withstand a design basis earthquake".

The integrity assessment report (Appendix 4B) describes the building and secondary containment system. This system is designed to ensure any release is detected within 24 hours. The secondary containment system also is designed to contain 100 percent of the maximum operating capacity of the vapor-liquid separator/reboiler loop, and the drain systems are sloped to allow collection of solution and have sufficient capacity to drain this volume in less than the required 24 hours.

The integrity assessment report describes the protective coating material and sealant used to protect concrete and joints from attack by leaks to the secondary containment. The materials of construction for the sump and drain lines are also compatible with the waste processed at the 242-A Evaporator.

4.1.6.2 242-A Building Secondary Containment

The 242-A Building serves as a secondary containment vault for the vapor-liquid separator (C-A-1), condensate collection tank (C-100), and ancillary equipment used for transferring mixed waste at the 242-A Evaporator. The concrete for the operating area was poured to form a monolithic structure. Where needed, joints in the concrete were fabricated with preformed filler conforming to the standards of the American Society of Testing and Materials. Joint filler is sealed with a polysulfide sealant per the requirements of the construction specifications (Vitro 1974).

Before restart in 1994, a new acrylic special protective coating was applied to the concrete in the pump, evaporator, and condenser rooms. The coating meets the requirements of the construction specifications (Vitro 1974), including resistance to very high radiations doses, temperatures of 77o C, and spills of 25 percent caustic solution.

The following six rooms contain equipment used to process or store*mixed waste:

- Pump room
- Evaporator room
- Condenser room

- Ion exchange room
- Load out room* (used for temporary storage of mixed waste)
- Hot equipment storage room.

4.1.6.2.1 Pump Room

The pump room secondary containment walls are 0.38 to 0.56-meter (1.25 to 1.84-feet) thick reinforced concrete. The secondary containment floor is 0.51-meter-thick reinforced concrete. The pump room floor is lined with 0.64-centimeter (0.25-inch) stainless steel and the concrete walls and ceiling cover blocks are painted with a special protective coating. The pump room contains pipe jumpers used to transport feed and slurry solutions between the vapor-liquid separator and the DST System, and the process recirculation loop, recirculation pump (P-B-1), and slurry pump (P-B-2).

Leaks in the pump room collect in the pump room sump, a 1.5-meter (4.9-feet) by 1.5-meter (4.9-feet) by 1.8-meter (5.9 feet) deep sump with a 0.64-centimeter (0.25-inch) stainless steel liner. The pump room sump collects spills from various sources for transfer to the feed tank, 241-AW-102. Figure 4.6 provides a simplified process flow schematic of sources, which drain to the pump room sump. Drainage to the sump includes:

- Leaks to the pump room floor from equipment in the pump room
- Evaporator room floor drain
- Hot equipment storage room floor drain
- Load out room floor drain
- Raw water backflow preventer drain

Solution in the pump room sump is transferred to the feed tank (241-AW-102) using a steam jet. A 10-inch secondary containment overflow line is provided for draining large volumes of solution should a catastrophic tank failure occur. Because the overflow line provides a direct path between the air space of tank 241-AW-102 and the pump room, a minimum level of water must be maintained in the sump to prevent cross ventilation. A leak into the pump room sump would be detected by a rise in the sump level. Instrumentation provided alarms on high sump level.

The recirculation and slurry pumps in the pump room are equipped with mechanical seals having pressurized water introduced between the seals. The seal water is maintained at a pressure that exceeds the process pressure at the seal to ensure water leaks into the process solution, but waste solution does not leak out. Water from seal leakage is collected in funnels in the pump room and routed to feed tank 241-AW-102 via the 10-inch overflow line described previously.

4.1.6.2.2 Evaporator Room

The evaporator room secondary containment walls are 0.56-meter-thick reinforced concrete. The secondary containment floor is 0.51-meter-thick reinforced concrete. The evaporator room contains the vapor-liquid separator vessel (C-A-1), part of the recirculation loop, the reboiler, the 42-inch vapor line, and line used to empty the vapor-liquid separator to feed tank 241-AW-102.

Leaks in the evaporator room flow to a floor drain that routes through a 3-inch line to the pump room sump described in Section 4.1.6.2.1. A leak in the evaporator room would be detected by a rise in the pump room sump level. The floor of the evaporator room and a portion of the pump room floor are 3.0 meters below grade to contain the entire contents of the vapor-liquid separator, reboiler, and recirculation loop in the event of a catastrophic failure. The floor and walls of the evaporator room up to an elevation of 1.8 meters are painted with a special protective coating.

4.1.6.2.3 Condenser Room

The condenser room secondary containment walls are 0.36- to 0.56-meter-thick reinforced concrete. The secondary containment floor is 0.51-meter-thick reinforced concrete.

The condenser room contains all the components of the process condensate system described in Section 4.1.3.1 (refer Figure 4.4), including tank C-100.

Leaks in the condenser room flow to two floor drains that join and route through a 6-inch line to feed tank 241-AW-102. Leaks in the condenser room are detected by the following:

- Unexpected changes in liquid level in tank C-100. Instrumentation is provided to monitor liquid level in the tank, including high- and low-level alarms.
- Daily visual inspections of process condensate system components and piping.

The floor and walls of the condenser room up to an elevation of 1.2 meters are painted with a special protective coating.

4.1.6.2.4 Load out and Hot Equipment Storage Rooms

The load out and hot equipment storage rooms secondary containment walls are 0.30- to 0.56-meter (0.98- to 1.84-feet) thick reinforced concrete. The secondary containment floors are 0.15-meter (0.49-feet) thick reinforced concrete. The room contains two recirculation lines and samplers used to sample the feed and slurry streams. The feed sampler has been isolated and is no longer capable of sampling feed. The lines and samplers are located in a shielded enclosure adjacent to the pump room wall.

The load out and hot equipment storage room contains two sumps: the drain sump and decontamination sump. The sumps are 0.91 meter in diameter, about 1.2 meters deep, and lined with stainless steel. Both sumps drain via a 3-inch drain line to the pump room sump described in Section 4.1.6.2.1. The sumps, floor, and walls of the load out and hot equipment storage room up to an elevation of 3.8 meters are painted with a special protective coating.

Leaks in the sampler piping, flow into two drains in the sample enclosure, which drain via a 2-inch line to the decontamination sump, which drains to the pump room sump (described in 4.1.6.2.1). Leak detectors in the sampler enclosures or a rise in the pump room sump level detects leaks in the sampler piping.

4.1.6.2.5 242-A Building Drain Lines

Figure 4.6 provides a simplified process flow schematic of sources routed to the 242-A Building drain lines. The 242-A Treatment, Storage, and Disposal (TSD) unit boundary includes these lines up until they exit the 242-A Building. At this point, the lines are considered DST system components. Four lines serve to drain the 242-A Building and equipment to feed tank 241-AW-102:

- Pump room sump drain line (DR-334): a 10-inch carbon steel line that transfers process condensate overflow/diverted liquids and empty out of the pump room sump to the feed tank
- Vapor-liquid separator vessel drain line (DR-335): a 10-inch carbon steel line that allows gravity drain of the vessel to the feed tank
- Condenser room drain line (DR-343): a 6-inch carbon steel line that drains potential leakage from the condenser room.
- Diverted process condensate drain line (DR-338): process condensate liquid drains through DR-338 into sump drain line (DR-334) which drains to 241-AW-102.

The four lines are sloped to drain about 170 meters to feed tank 241-AW-102 via the drain pit (241-AW-02D). Although WAC 173-303-640(1)(c) exempts systems that serve as secondary containment from requiring secondary containment, drain lines DR-334, DR-335, and DR-338 have outer encasement piping.

The drain lines are connected to a cathodic protection system to prevent external corrosion from contact with the soil. The cathodic protection system consists of:

- A rectifier that converts supplied alternating current voltage to an adjustable direct current voltage

- Numerous anodes buried near the underground piping and connected to the rectifier.
- Return wiring that connects the piping to the rectifier, completing the circuit.
- The rectifiers are inspected to ensure component degradation has not occurred. Test stations along the system are checked annually to verify they meet the performance criteria established by the National Association of Corrosion Engineers (RP-02-85). The criteria used to determine compliance will be documented in the Hanford Facility Operating Record, 242-A Evaporator unit specific portion.

Further detail regarding design and construction of DR-334,-335,-338 and -343 is provided in DOE/RL-90-39 (Hanford Facility Dangerous Waste Permit Application Double-Shell Tank System). Further detail regarding the design, operation, maintenance, and inspection of the cathodic protect system for these lines are also provided in DOE/RL-90-39.

4.1.6.3 Transfer Line Containment

This section describes the design and operation of secondary containment and leak detection systems for transfer lines between the DST System and the 242-A Evaporator, and from 242-A to LERF (one line only, PC-5000). The 242-A TSD boundary for lines running between 242A and the DST System ends at exterior wall of 242-A building. At this point, these lines (e.g., feed and slurry line piping) are DST System components. For further detail regarding SN-269, SN-270, SL-167, and SL-168 refer to DOE/RL-90-39.

The PC-5000 transfer line transfers process condensate (Section 4.1.2) from the 242-A building to LERF. The 242-A TSD unit boundary includes PC-5000 up to the LERF fence line (Chapter 1.0, topographic map, and Section 4.1.2, for the TSD unit boundary)

4.1.6.3.1 Feed Line Piping

Two feed lines (SN-269 and SN-270) (one in service and one spare), each consist of 3-inch transfer piping within a 6-inch secondary containment encasement piping. Both the transfer and encasement pipes are constructed of Schedule 40 carbon steel. The lines run below grade about 120 meters from pump pit 241-AW-02E (above feed tank 241-AW-102) to the 242-A Building.

To detect transfer-piping failures, leak detector risers equipped with conductivity probes are installed on the encasement lines. The transfer piping and encasements are sloped towards the conductivity probe, which, on leak detection, annunciates an alarm in the 242-A Evaporator control room. A valve in the pump pit (241-AW-02E) can be opened to drain solution from the encasement pipe into the pit, which drains to feed tank 241-AW-102.

4.1.6.3.2 Slurry Line Piping

The slurry pump (P-B-2) transfers solution through one of two transfer lines: SL-167, for transfer to valve pit 241-AW-B (standard configuration), or SL-168 for transfer to valve pit 241-AW-A (alternate configuration). Slurry solution can be routed via double-encased piping from these valve pits to any designated DST slurry receiver. Both slurry transfer lines consist of 2-inch transfer piping within a 4-inch secondary containment encasement piping. Both the transfer and encasement pipes are constructed of Schedule 40 carbon steel. The lines run below grade about 73 meters between the 242-A Building and the valve pits.

These slurry lines contain leak detector risers and conductivity probes similar to the feed line piping described in Section 4.1.6.3.1.

4.1.6.3.3 PC-5000

The process condensate transfer line (PC-5000) from the 242-A Evaporator is centrifugally cast, fiberglass-reinforced epoxy thermoset resin pressure pipe fabricated to meet the requirements of ASME D2997 (ASME 1984).

The 3-inch (7.6-cm) carrier piping is centered and supported within 6-inch (15.2-cm) containment piping. Pipe supports are fabricated of the same material as the pipe, and meet the strength requirements of ANSI B31.3 (ANSI 1987) for dead weight, thermal, and seismic loads.

Drawing H-2-79604 provides details of the piping from the 242-A Evaporator to LERF.

This permit includes the portion of the PC-5000 line leaving the 242-A Evaporator facility to the fence line of LERF (Chapter 1.0 and topographic maps for unit boundary).

Single-point electronic leak detection elements are installed along the transfer line at 305-meter (1000 foot) intervals. The leak detection elements are located in the bottom of specially designed test risers. Each sensor element employs a conductivity sensor, which provides a signal to the 242-A Evaporator control room when a potential leak is detected. If a leak develops in the carrier pipe, fluid will travel down the exterior surface of the carrier pipe or the interior of the containment pipe. As moisture contacts a sensor unit, a general alarm sounds in the 242-A Evaporator control room on the Monitoring Control System. In addition, the zone of the sensor unit causing the general alarm can be determined using the leak detection-monitoring panel. Upon verification of a leak, the pump located in the 242-A Evaporator is shut down, stopping the flow of aqueous waste through the transfer line. A low-volume air purge of the annulus between the carrier pipe and the containment pipe is provided to prevent condensation buildup and minimize false alarms by the leak detection elements.

If a leak is detected using visual inspection of the PC-5000 transfer line encasement at the encasement catch tank (TK-PC-101) in the LERF catch basin (242AL-43), the shift manager is notified. The Shift Manger will direct shutdown of the aqueous waste through the PC-5000 transfer line.

4.1.6.4 Additional Requirements for Specific Types of Systems

Addressed in this section are additional requirements in WAC 173-303-640 for vault systems like the 242-A Building to ensure neither buildup of ignitable vapors nor does infiltration of precipitation occur. This section also addresses secondary containment for ancillary equipment and piping associated with the tank systems.

4.1.6.4.1 Vault Systems

The 242-A Building is a vault constructed partially below ground, providing secondary containment for the tank systems. The DST System waste processed at the 242-A Evaporator is designated ignitable and reactive because of the presence of nitrite and nitrate salts, which are considered oxidizers per 49 CFR 173. Because of their low volatility, these compounds are unlikely to be present in the vapor phase of the tank systems at the 242-A Evaporator. However, to prevent the spread of contamination, the vapor-liquid separator (C-A-1) is ventilated and maintained at lower air pressure than the building air space. This ensures air leakage is from uncontaminated building air space into the tank vapor space. Vapors from the vapor-liquid separator flow to the vacuum condenser system described in Section 4.0.

The condensate collection tank (C-100), collects process condensate that is not designated ignitable or reactive.

The tank systems and ancillary equipment are located within the 242-A Building, which is completely enclosed to prevent run-on and infiltration of precipitation into the secondary containment system.

4.1.6.4.2 Ancillary Equipment

The 242-A Building provides secondary containment for ancillary equipment. Double containment is provided for the feed and slurry transfer lines between the 242-A Building and the AW Tank Farm by pipe-in-pipe arrangements. Therefore, all ancillary equipment has secondary containment and the daily inspection requirements in WAC 173-303-640(4)(f) are not applicable.

4.1.7 Variances from Secondary Containment Requirements

The integrity assessment report (Appendix 4B) discusses the following three deficiencies associated with the secondary containment system:

Pump Room Sump. The pump room sump does not comply with secondary containment requirements because liquid must be kept in the sump to provide a seal to prevent airflow between the pump room and feed tank 241-AW-102. Although the sump has a 0.63-centimeter (0.25-inch)-thick stainless steel liner to prevent corrosion of the concrete floor, the sump does not have secondary containment.

Routine Discharges through Secondary Containment. The configuration of the 242-A Evaporator process requires routine, batch discharges of dangerous waste through secondary containment drain lines. These routine discharges include the following.

- Steam condensate, cooling water, and process condensate sample stations drain to the feed tank, 241-AW-102, through drain line DR-343. Total discharge is about 38 liters (10 gallons) per month during operation.
- Sample bottle water sprays down in the slurry sample station drains to the decontamination sump in the load out and hot equipment storage room. The decontamination sump then drains to the pump room sump. Total discharge is about 76 liters per month during operation.

Transfer Piping Wall Penetrations. Three dangerous waste transfer line piping sections passing through the 242-A Building wall are single-walled, i.e., no secondary confinement in the wall (about 56-centimeter-thick reinforced concrete).

These deficiencies were identified to Ecology, October 28, 1993. Ecology's response stated, "No physical revision of the pipe wall penetrations or the floor drains in the evaporator pump room will be required prior to evaporator restart". The response required the following.

- If at any time leakage is seen or detected from these installations, or if for any reason these installations are repaired or rebuilt, they will be rebuilt or repaired in accordance with regulations.
- Should a spill occur in the evaporator pump room the sump and the piping shall be rinsed three times as required in WAC 173-303-160. 'Appropriate' in this case means that the original regulation was written for a free container, not a sump, so that judgment will have to be used in the application of the regulation. The rinsate shall be transferred to the double-shell tanks.

4.1.8 Tank Management Practices

All waste to be processed at the 242-A Evaporator must be sampled to determine if the waste is compatible with the materials of construction at the 242-A Evaporator. Before each campaign, candidate feed tanks are sampled per the requirements of the waste analysis plan (Chapter 3.0). Based on the results, three possible options are implemented.

- The waste is acceptable for processing without further actions.
- The waste is unacceptable for processing as a single batch, but is acceptable if blended with other waste that is going to be processed.
- The waste is unacceptable for processing.

The 242-A Evaporator process is controlled by the MCS. The MCS computer monitors liquid levels in the vapor-liquid separator (C-A-1) and condensate collection tank (C-100). The MCS system manages liquid levels in the C-A-1 using an auto-cascade function that controls feed delivery to the C-A-1 vessel. The MCS system also manages liquid levels in the C-100 using an auto-cascade function to maintain the tank level at approximately 50-percent. The MCS has alarms that annunciate on high-liquid levels for both C-A-1 and C-100 to notify operators that actions must be taken to prevent overfilling of these vessels.

An interlock is activated when high-liquid level in the vapor-liquid separator (C-A-1) is detected, automatically shutting down the feed transfer pump at feed tank 241-AW-102, thereby preventing overfilling of the vessel and carryover of slurry into the process condensate system. The condensate collection tank (C-100) has an overflow line that routes solution to feed tank 241-AW-102 in case of overfilling.

Process and instrumentation drawings are listed in Section 4.3.

The MCS also provides an automated interlock to shutdown the recirculation pump (P-B-1) and slurry pump (P-B-2) if a leak is detected. The recirculation pump (P-B-1) and slurry pump (P-B-2) will be shutdown automatically using the MCS interlock and/or manually at the direction of the Shift Manager or 242-A Evaporator Control Room Operator if a leak occurs. The process condensate pump (P-C-100) will be shut down manually at the direction of the Shift Manager or 242-A Evaporator Control Room Operator if a leak occurs.

4.1.9 Labels or Signs

A labeling upgrade was completed before restart in 1994 for tank C-100 to identify the waste contents and major risks associated with waste stored within the tank. Tank C-100 ancillary piping is labeled "PROCESS CONDENSATE" to alert trained personnel which pipes in the condenser room contain dangerous waste. The vapor-liquid separator (C-A-1) is located in the evaporator room, a normally unoccupied area. This area is posted as a high radiation area with as low as reasonably achievable (ALARA) access controlled and limited to trained personnel only. The tank labels are visible from the walls of the tank enclosure rooms, which are less than 15 meters from the tank systems; therefore, label visibility requirements are met.

4.1.10 Air Emissions

Tank systems that contain extremely hazardous waste, and is acutely toxic by inhalation must be designed to prevent the escape of such vapors. The DST System waste in the vapor-liquid separator, C-A-1, is designated extremely hazardous waste; however, no determination has been performed to determine if the waste is acutely or chronically toxic. Most of the toxic compounds in the DST waste are not volatile, but because of the high radioactivity of the waste, controls are included to prevent or mitigate the release of tank vapors. The vapor-liquid separator is maintained under vacuum to ensure air leakage is from uncontaminated building air space into the tank vapor space. The boiling vapor in C-A-1 passes through deentrainment pads and sprays to prevent liquid and solid carryover into the vapor section of the tank. The vapor stream passes through three condensers that remove the condensable components. The noncondensable vapors pass through High Efficiency Particulate Air (HEPA) filters before being discharged to the environment.

4.1.11 Management of Ignitable or Reactive Wastes in Tank Systems

Although the DST System waste reprocessed at the 242-A Evaporator is designated ignitable because of the presence of oxidizers (nitrates and nitrites), the waste does not meet the definition of a combustible or flammable liquid given in National Fire Protection Association (NFPA) code number 30 (NFPA 1996). The buffer zone requirements in NFPA-30, which require tanks containing combustible or flammable solutions be a safe distance from each other and from public way, are not applicable.

An analysis is performed on the DST System waste to be processed to verify the waste does not react exothermically at the elevated temperatures at the 242-A Evaporator. The waste analysis plan (Chapter 3.0) discusses waste acceptance requirements due to reactive waste designation.

4.1.12 Management of Incompatible Wastes in Tank Systems

Waste transferred to the 242-A Evaporator must be compatible before mixing. The waste analysis plan (Chapter 3.0) includes waste compatibility requirements.

4.2 Air Emissions Control

This section addresses the requirements of Air Emission Standards for Process Vents, under Subpart AA (incorporated by reference in WAC 173-303-690).

4.2.1 Applicability of Subpart AA Standards

The 242-A Evaporator performs distillation that specifically requires evaluation of process vents for the applicability of 40 CFR 264 Subpart AA.

Waste processed at the 242-A Evaporator routinely contains greater than 10 parts per million organic concentrations; therefore, organic air emissions are subject to 40 CFR 264.1032, which requires organic emissions from all affected vents at the Hanford Facility be less than 1.4 kilograms per hour and 2.8 megagrams per year, or control devices be installed to reduce organic emissions by 95%.

The 242-A Evaporator has one process ventilation system that vents both the vapor-liquid separator (C-A-1) and the condensate collection tank (C-100). The vent lines from both tanks combine before entering an off-gas system consisting of a deentrainer, a prefilter/demister, HEPA filters, and an exhaust fan. The vessel vent off-gas system is located on the third floor of the condenser room, with the exhaust stack extending horizontally through the east wall of the building at an elevation of 14.7 meters above ground level. The exhaust stack bends to run vertically with the discharge point 18.6 meters above ground level.

The annual average flow rate for the vessel vent is given in *Radionuclide Air Emissions Report for the Hanford Site - Calendar* Year *1995* (DOE-RL 1996) as 18 cubic meters per minute and the total annual flow was 9.6 E+06 cubic meters. During waste processing, the airflow is about 20.5 cubic meters per minute, with about 4.3 cubic meters per minute ventilated from tank C-100 and the remainder from the vapor-liquid separator and air in leakage.

Organic emissions occur during waste processing, which is less than 6 months (182 days) each year. This is the maximum annual operating time for the 242-A Evaporator, as shutdowns are required during the year for maintenance outages, candidate feed tank analysis, and establishing transfer routes for staging waste in the DST System. The total operating time for the two campaigns in 1994 was 86 days.

4.2.2 Process Vents - Demonstrating Compliance

This section outlines how the 242-A Evaporator complies with the requirements of 40 CFR 264, Subpart AA, including a discussion of the basis for meeting the organic emission limits, calculations demonstrating compliance, and conditions for reevaluating compliance.

4.2.2.1 Basis for Meeting Limits/Reductions

The TSD units at the Hanford Facility subject to 40 CFR 264, Subpart AA meet the organic air emission limits of 1.4 kilograms per hour and 2.8 megagrams per year, established in 40 CFR 264.1032, by the design of the facility. The 242-A Evaporator and the other TSD units collectively can meet these standards without the use of air pollution control devices.

4.2.2.2 Demonstrating Compliance

Process vent organic air emissions are controlled by establishing limits for acceptance of waste at the 242-A Evaporator. Before startup of each campaign, the waste to be processed is sampled in the DST System to determine the organic content. If the concentrations of organic constituents are less than the limits in the waste analysis plan (Chapter 3.0), the waste can be processed, provided the Hanford Facility will not exceed 1.4 kilograms per hour and 2.8 megagrams per year. The waste acceptance limits in the waste analysis plan are based on equilibrium calculations and assumptions given in *Organic Emission Calculations for the 242-A Evaporator Vessel Vent System* (WHC 1996). The calculation to determine organic emissions consists of the following steps:

1. Determine the emission rate of each candidate feed tank organic constituent by multiplying the constituent concentration by the corresponding partition factor in *Organic Emission Calculations for the 242-A Evaporator Vessel Vent System* (WHC 1996).
2. Sum the emission rates of all organic constituents to determine the emission rate for the candidate feed tank. The maximum emission rate for the campaign is the rate from the candidate tank with the greatest emission rate.
3. Determine the total amount of emission during the campaign by using operating time and a weighted average emission rate, based on the volume of each candidate feed tank processed.

The organic emission rates and quantity of organics emitted during the campaign are determined using these calculations and are included in the operating record for each campaign, as required by 40 CFR 264.1035. The Hanford Facility has a system to ensure organic emissions from units subject to 40 CFR 264, Subpart AA are less than the limits of 1.4 kilograms per hour and 2.8 megagrams per year. Records documenting total organic emissions are available for Ecology review on request.

4.2.2.3 Reevaluating Compliance with Subpart AA Standards

Calculations to determine compliance with Subpart AA will be reviewed when any of the following conditions occur at the 242-A Evaporator:

- Changes in the configuration or operation that affect the assumptions in the Organic Emission Calculations for the 242-A Evaporator Vessel Vent System (WHC 1996)
- Annual operating time exceeds 182 days

4.3 Engineering Drawings

The drawings in Table 4.1 are process and instrumentation diagrams for the systems at the 242-A Evaporator that contact mixed waste. These drawings are provided for general information, and demonstrate adequacy of the tank systems design.

Table 4.1. Process and Instrumentation Diagrams

System	Drawing Number	Drawing Title
Vapor-Liquid Separator	H-2-98988 Sheet 1	P & ID Evaporator Recirc System
Reboiler/Recirculation Line	H-2-98988 Sheet 2	P & ID Evaporator Recirc System
Slurry System	H-2-98989 Sheet 1	P & ID Slurry System
Condensate Collection Tank	H-2-98990 Sheet 1	P & ID Process Condensate System
Secondary Containment Drain System	H-2-98995 Sheet 1	P & ID Drain System
Secondary Containment Drain System	H-2-98995 Sheet 2	P & ID Drain System
Condensers	H-2-98999 Sheet 1	P & ID Vacuum Condenser System
Pump Room Sump	H-2-99002 Sheet 1	P & ID Jet Gang Valve System
Condensate Recycle System	H-2-99003 Sheet 1	P & ID Filtered Raw Water System
Process Condensate Line PC-5000	H-2-79604	Piping Plot for PC-5000 between 242 A and the LERF fence line

The drawings in Table 4.2 are for secondary containment systems for the 242-A Evaporator. Because secondary containment systems are the final barrier for preventing the release of dangerous waste into the environment, modifications that affect the secondary containment systems will be submitted to the Washington State Department of Ecology, as a Class 1, 2, or 3 Permit modifications, as required by WAC 173-303-830.

Table 4.2. 242-A Evaporator Secondary Containment Systems Drawings

System	Drawing Number	Drawing Title
242-A Building	H-2-69277 Sheet 1	Structural Foundation Plan Sections & General Notes - Areas 1 & 2
	H-2-69278 Sheet 1	Structural Foundation Elevations & Details - Areas 1 & 2
	H-2-69279 Sheet 1	Structural First Floor Plan & AMU - Areas 1 & 2
Pump Room Sump Drainage	H-2-69352 Sheet 1	Sections Process Waste Drainage
242-A Building Drainage	H-2-69354 Sheet 1	Plan Process Waste Drainage
Pump Room Sump	H-2-69369 Sheet 1	Pump Room Sump Assembly & Details

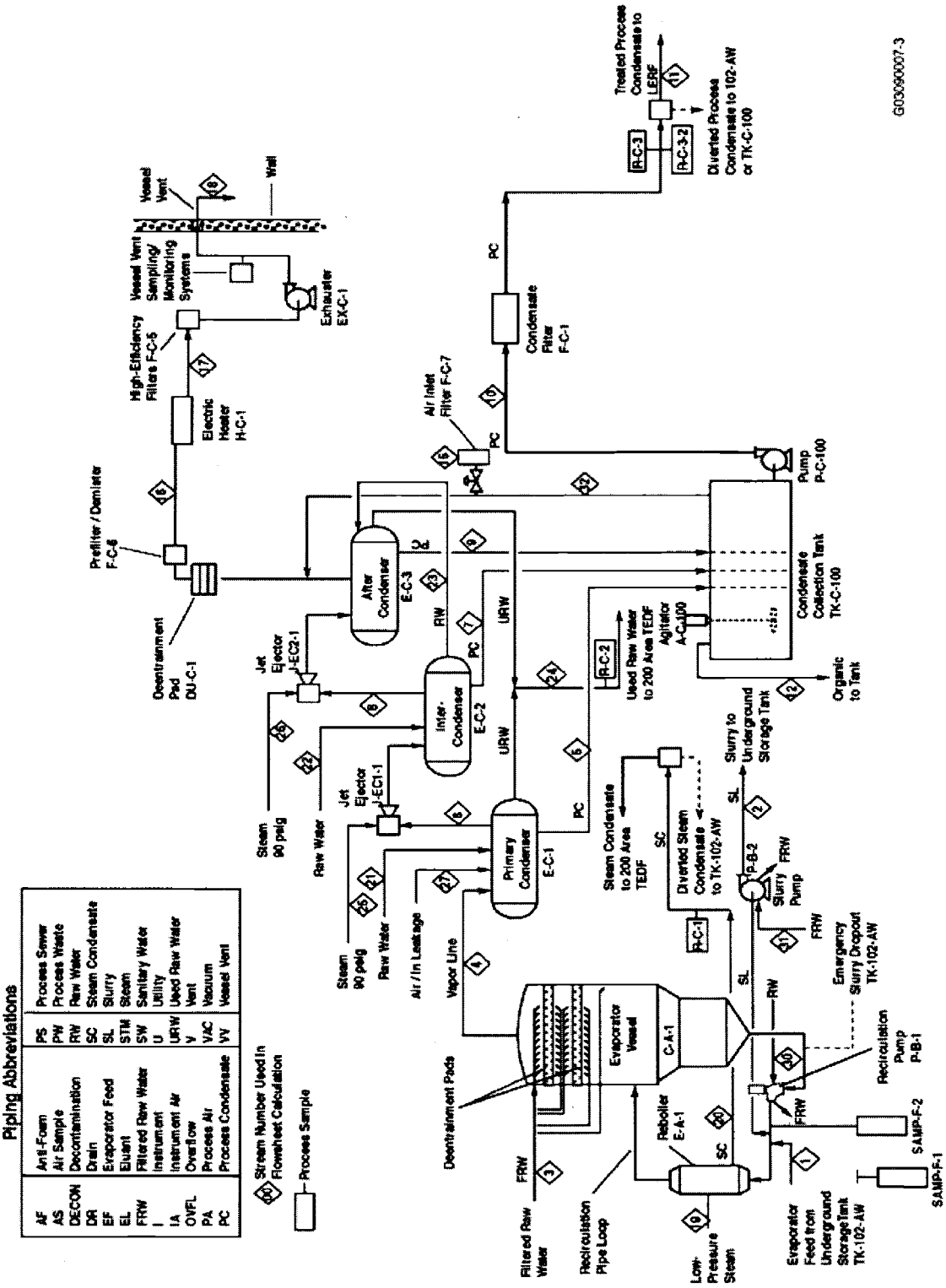

Figure 4.1. 242-A Evaporator Simplified Process Flow Diagram

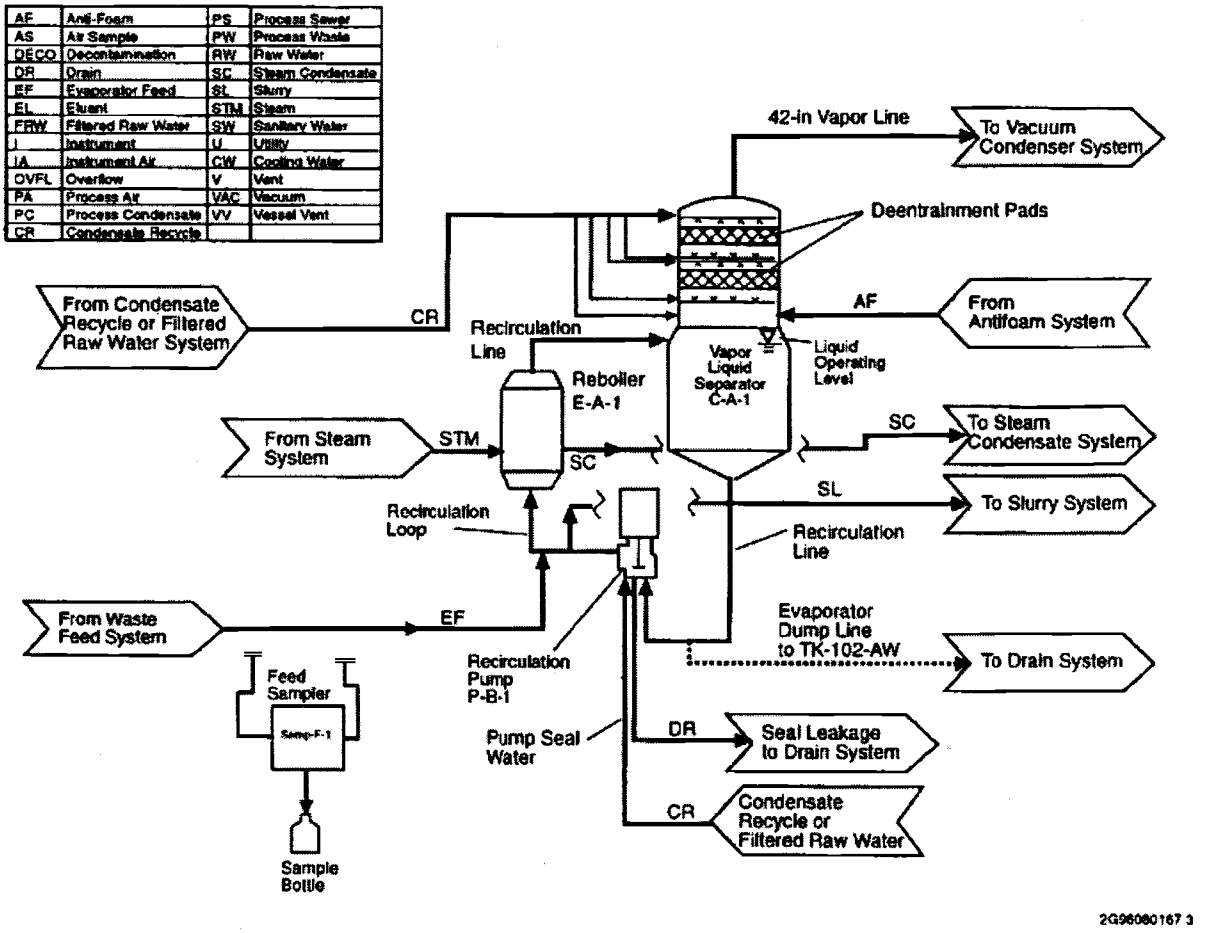

Figure 4.2. 242-A Evaporator Process Loop

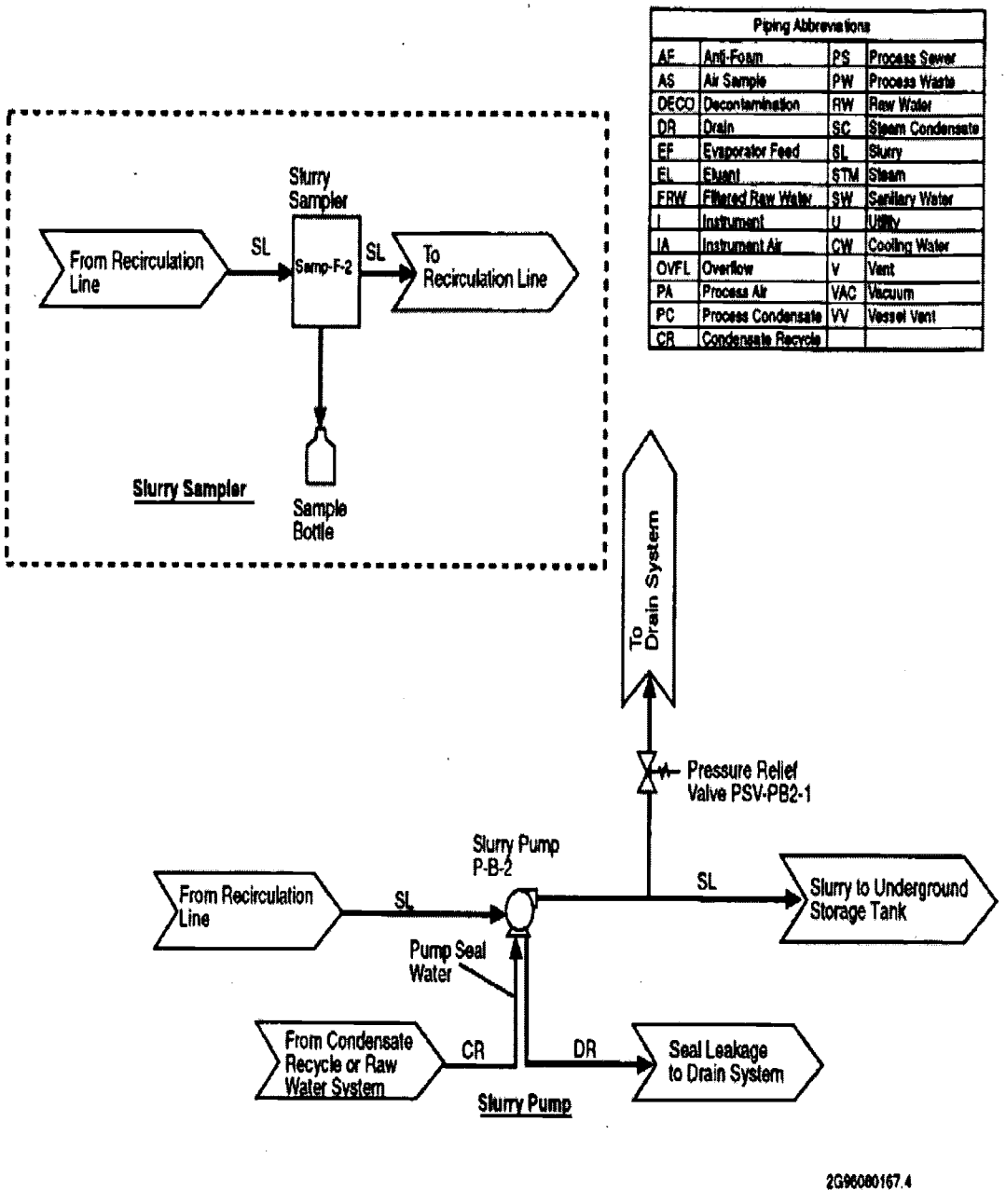

Figure 4.3. 242-A Evaporator Slurry System

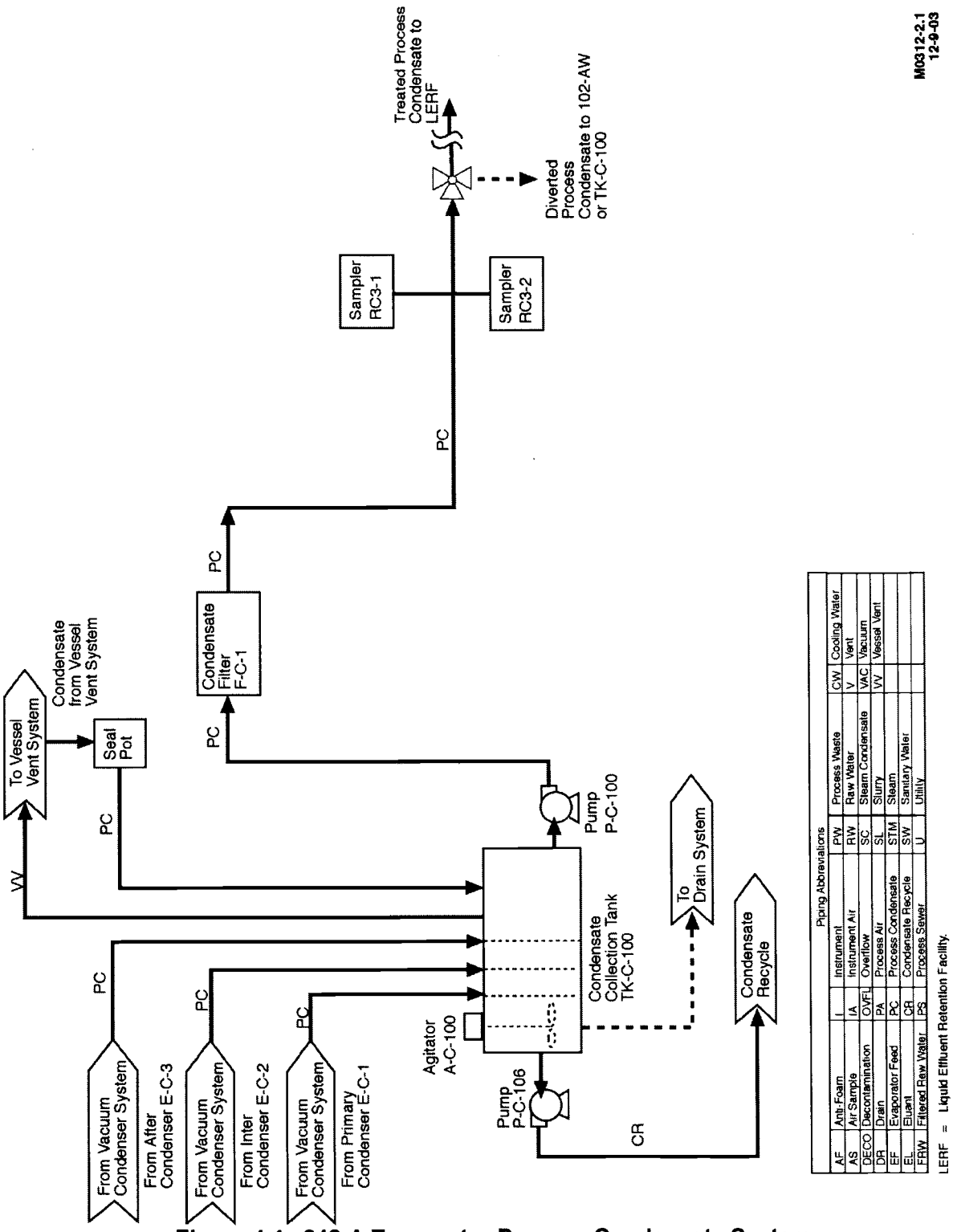

Figure 4.4. 242-A Evaporator Process Condensate System

Piping Abbreviations			
AF	Anti-Foam	PS	Process Sewer
AS	Air Sample	PW	Process Waste
DECO	Decontamination	RW	Raw Water
DR	Drain	SC	Steam Condensate
EF	Evaporator Feed	SL	Slurry
EL	Eluant	STM	Steam
FRW	Filtered Raw Water	SW	Sanitary Water
I	Instrument	U	Utility
IA	Instrument Air	CW	Cooling Water
OVFL	Overflow	V	Vent
PA	Process Air	VAC	Vacuum
PC	Process Condensate	VV	Vessel Vent
CR	Condensate Recycle		

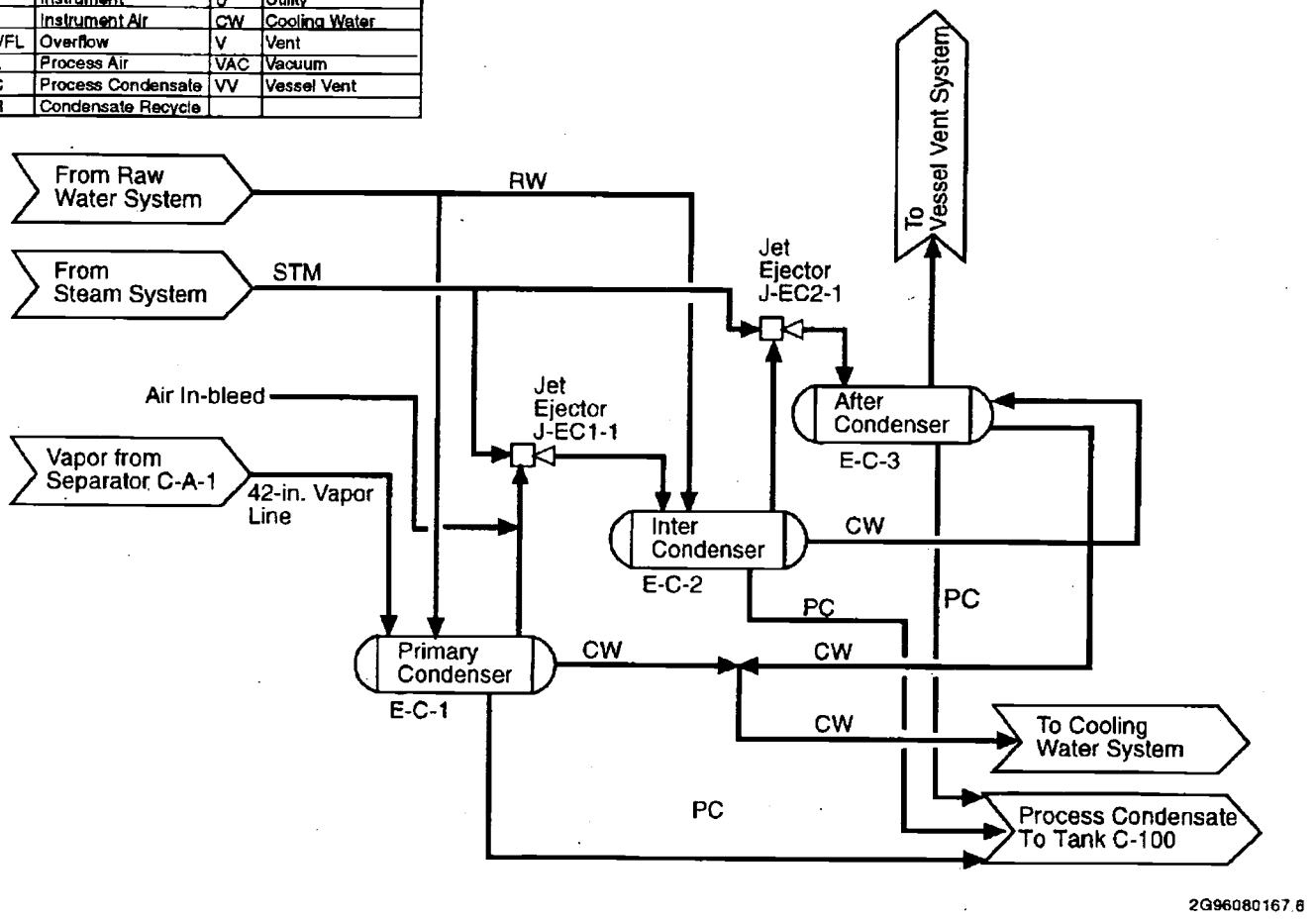

Figure 4.5. 242-A Evaporator Vacuum Condenser System

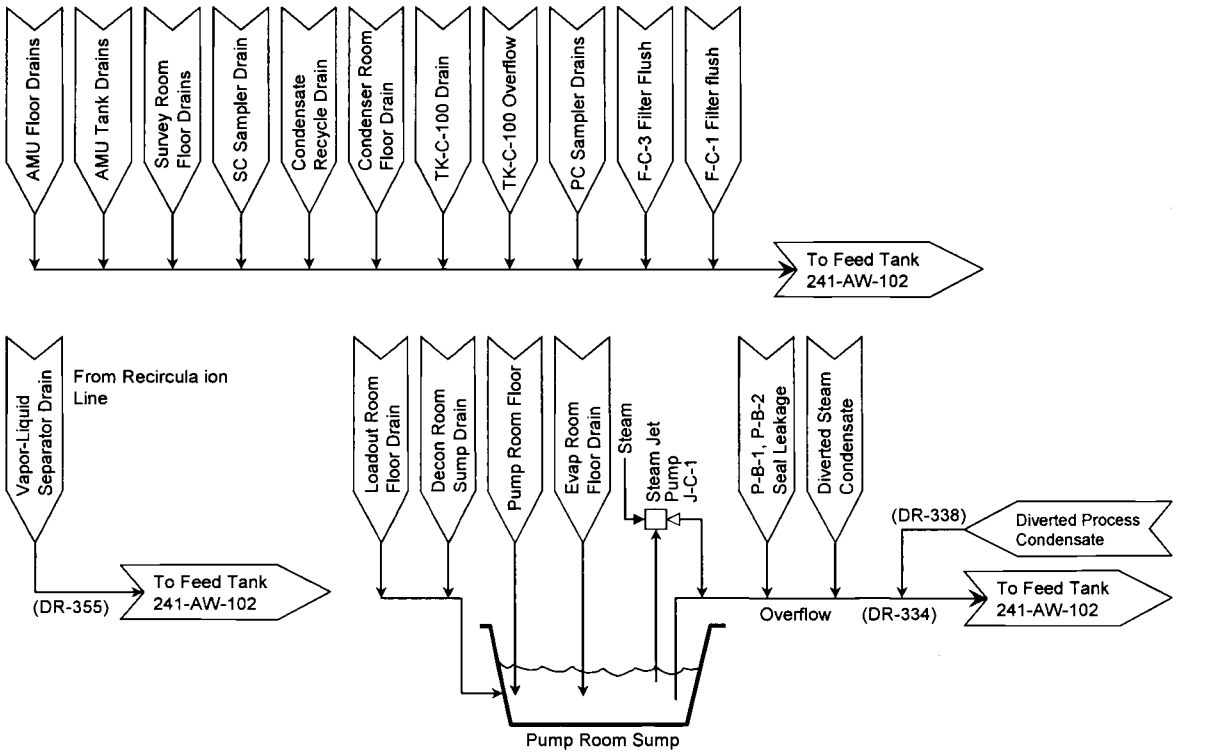

Figure 4.6. 242-A Evaporator Drain System

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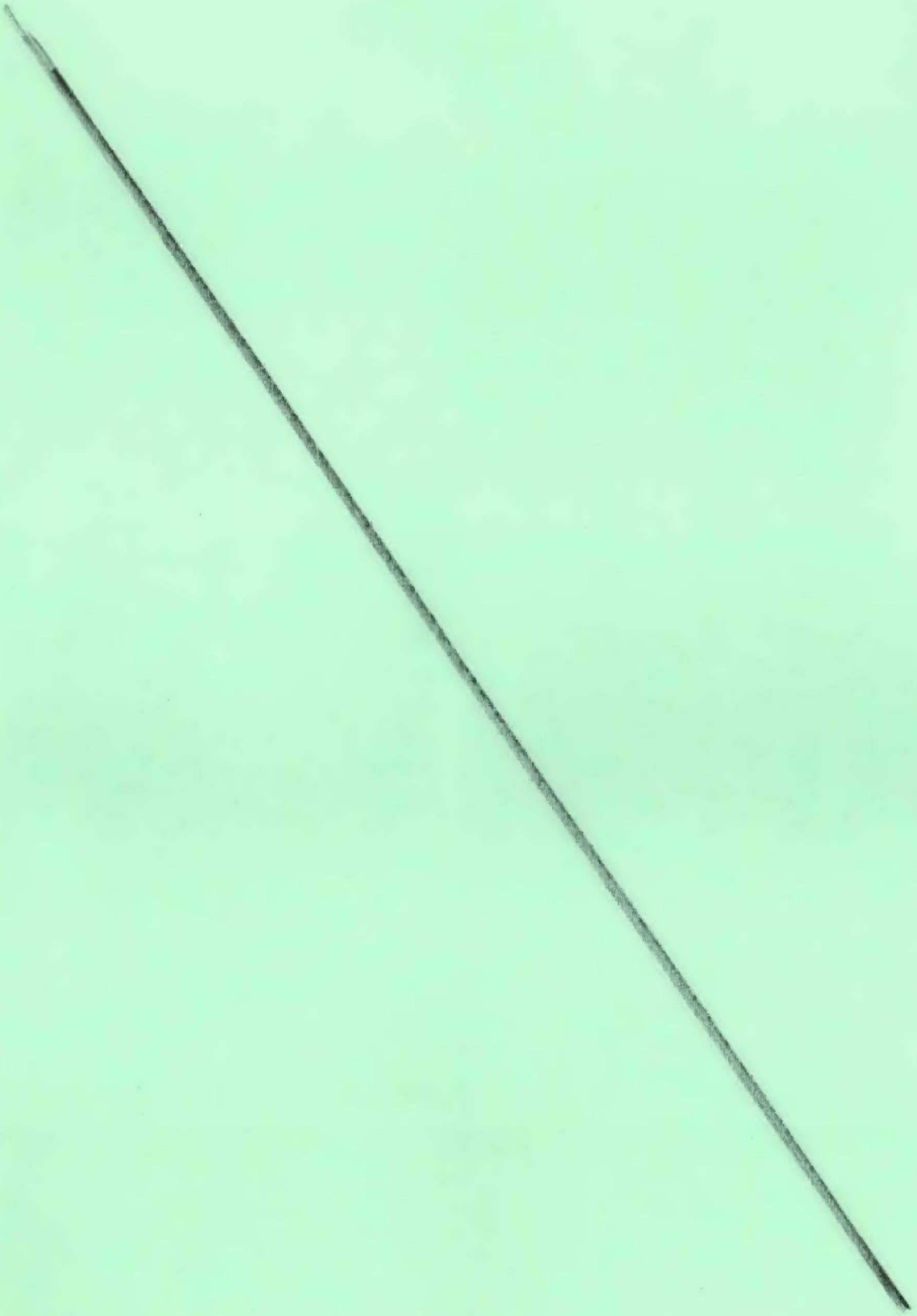

APPENDIX 4B

THE 242-A EVAPORATOR/CRYSTALLIZER TANK SYSTEM INTEGRITY ASSESSMENT REPORT

1998 INTERIM
242-A EVAPORATOR TANK SYSTEM
INTEGRITY ASSESSMENT REPORT

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1.0 INTRODUCTION

1.1 General Comments

This Integrity Assessment Report (IAR) is prepared by Fluor Daniel Northwest (FDNW) under contract to Lockheed-Martin Hanford Company (LMHC) for Waste Management Hanford (WMH), the 242-A Evaporator (facility) operations contractor for Fluor Daniel Hanford, and the U.S. Department of Energy, the system owner. The contract specifies that FDNW perform an interim (5 year) integrity assessment of the facility and prepare a written IAR in accordance with Washington Administrative Code (WAC) 173-303-640(2).

The WAC 173-303 defines a treatment, storage, or disposal (TSD) facility tank system as the "dangerous waste storage or treatment tank and its ancillary equipment and containment." This integrity assessment evaluates the two tank systems at the facility: the evaporator vessel, C-A-1 (also called the vapor-liquid separator), and the condensate collection tank, TK-C-100. This IAR evaluates the 242-A facility tank systems up to, but not including, the last valve or flanged connection inside the facility perimeter. The initial integrity assessment performed on the facility (Appendix A: Reference 13) evaluated certain subsystems not directly in contact with dangerous waste, such as the steam condensate and used raw water subsystems, to provide technical information. These subsystems were not evaluated in this IAR.

The last major upgrade to the facility was project B-534. The facility modifications, as a result of project B-534, were evaluated in the 1993 facility interim integrity assessment. Since that time, the following upgrades have occurred in the facility:

- Installation of a process condensate recycle system.
- Installation of a package steam boiler to provide steam for the facility. The package boiler is not within the scope of the facility TSD.

- Rerouting of the steam condensate and used raw water systems to the treated effluent disposal facility (TEDF). Steam condensate and used raw water are not dangerous wastes.

1.2 System Description

The purpose of the 242-A Evaporator is to reduce the volume of dangerous waste requiring interim storage in underground double shell tanks (DST) for eventual treatment and disposal. The waste volume reduction is achieved via evaporative concentration. The facility is designed and equipment selected to maintain a set boil-off rate of 2.65 liters/second (40 gallon/minute) at a feed rate of 4.4 to 7.6 liters/second (70-120 gallons/minute), yielding a waste volume reduction factor ranging from 35 percent to 60 percent. The facility has seven operational subsystems that are described as follows:

1. **Evaporator Process and Slurry Subsystem**: The evaporator and process slurry subsystem circulates the waste feed through the evaporator and the reboiler vessels, boiling off water vapor and concentrating the waste into a slurry. The water vapor is routed through the vapor condenser subsystem and the concentrated slurry is sent to a double shell tank. The evaporator vessel and the associated recirculation loop/reboiler are a dangerous waste storage tank system subject to the tank requirements of WAC 173-303.

2. **Vapor Condenser Subsystem**: The vapor condenser (VC) subsystem includes the three condensers operated within the facility. They condense the water vapor from the evaporator to form the process condensate (PC). The PC goes through the PC subsystem. The uncondensed vapors and non-condensable gases are filtered and monitored for radioactive contamination prior to discharge to the atmosphere through the vessel vent subsystem. The vapor condenser subsystem is ancillary equipment associated with the condensate collection tank which is a dangerous waste storage tank system subject to the tank requirements of WAC 173-303.

3. Vessel Vent Subsystem (NON-DANGEROUS WASTE SUBSYSTEM): The vessel vent (VV) subsystem contains a series of high-efficiency particulate air (HEPA) filters, de-entrainment pads, radiation monitoring system, and various heating and ventilating equipment. Uncondensed vapors and non-condensable gases that have been passed through the VC subsystem are filtered and vented to the atmosphere through this subsystem.

4. Process Condensate Subsystem: The PC subsystem receives the condensed water vapors (process condensate) from the vapor condenser subsystem. The process condensate drains into the condensate collection tank, TK-C-100, and is transferred to the liquid effluent retention facility (LERF). If additional decontamination is necessary prior to transferring process condensate to the LERF, the process condensate may be sent through the IX-D-1 ion exchange column to reduce the cesium (Cs) and strontium (Sr) content of the PC. However, use of the IX-D-1 is not anticipated for the duration of the life expectancy of the facility. The process condensate subsystem is continuously monitored for radioactive contamination by the RC-3 radiation monitor. In the event of radioactive contamination above the RC-3 monitoring/diversion system activation setpoint, the process condensate is automatically diverted back to the TK-C-100 condensate catch tank or the 241-AW-102 feed tank. The condensate collection tank is a dangerous waste storage tank system subject to the tank requirements of WAC 173-303.

5. Steam Condensate Subsystem (NON-DANGEROUS WASTE SUBSYSTEM): The steam condensate subsystem routes steam condensed in the reboiler to the TEDF. The steam condensate subsystem has an in-line radiation monitor, RC-1, which continuously monitors for excessive radioactive contamination. In the event of radiation detection in the system, the steam condensate discharge will be stopped through the SC-501 pipeline from the facility and diverted to the 241-AW-102 feed tank.

6. Raw Water Disposal Subsystem (NON-DANGEROUS WASTE SUBSYSTEM): The raw water disposal subsystem discharges raw water used as the coolant for the condensers to TEDF. The raw water disposal subsystem is continuously monitored for radioactive contamination with the RC-2 radiation monitor. In the event of radioactive contamination above the RC-2 monitoring system activation setpoint, an alarm sounds and the system is manually shut down.

7. Building and Secondary Containment Subsystem: This subsystem includes the evaporator building structure and the associated sump and drain systems. The operating area is a poured-in-place concrete structure divided into six specific rooms. Those portions of the structure that may come in contact with the waste solutions are coated with a chemically resistant acrylic coating or lined with stainless steel catch pans.

The facility rooms have drains which route spills away from occupied areas. The sump drains from a 10 inch overflow line to the 241-AW-102 feed tank. Drains from areas containing low activity process condensate, drain through a 6 inch line directly to the 241-AW-102 feed tank. A third drain line to the 241-AW-102 feed tank is used to quickly drain the evaporator vessel in an emergency.

1.2.1 Operating Parameters: Operating parameters for the 242-A Evaporator include the pressures and temperatures listed in Appendix G: Table G-1. The system temperatures and pressures were calculated from the appropriate process flow and operational data sheet design parameters for the components listed in this Appendix.

1.3 Scope

The scope of this integrity assessment is based on the recommendations in the original integrity assessment report. The major tasks associated with this integrity assessment include:

a. Nondestructive examination (NDE) of selected locations and components
b. Leak test of the evaporator/reboiler system and the condensate collection tank

c. Visual walkdown of the facility for signs of degradation
d. Review of operating logs and occurrence reports for events which may have caused degradation to the vessels
e. Review of original integrity assessment documentation to determine baseline status
f. Review of national codes and standards and DOE Orders to determine if there are significant new or revised requirements related to integrity of existing facilities.

This integrity assessment is limited to those vessels and piping within the facility which contain dangerous waste solutions. It does not include transfer piping or systems which do not contain dangerous waste. This IAR is certified by an Independent Qualified Registered Professional Engineer (IQRPE).

1.4 Comments on Certification

Paragraph 3.0 contains a certification on the accuracy of the information presented in this report. The certificate is signed and sealed by an Independent Qualified Registered Professional Engineer (IQRPE) in accordance with WAC 173-303-640(2).

2.0 ASSESSMENT

The integrity of the tank system described above, paragraph 1.2, is adequate to prevent failure caused by corrosion or by structural loads imposed by the system's intended service. See Appendix A, (1), (7), and (13) for a complete description of the system and intended service. The conclusions presented are based on performed system leak tests, walkdowns, ultrasonic tests, and a review of the applicable codes, standards, design, and construction documents, in addition to the previous interim integrity assessment. The following paragraphs (2.1 - 2.5) discuss specific considerations to ensure the facility's tank system complies with the requirements of WAC 173-303-640(2).

2.1 Codes and Standards

Because the systems at the facility which handle dangerous waste have not undergone any significant modifications or revisions to the tank system, an in depth review of the applicable codes and standards was not performed for this IAR. The review and evaluation of the codes and standards performed for the 1993 IAR is sufficient for this report.

2.2 Waste Characterization

The 242-A Evaporator facility receives and treats Washington State dangerous waste (categorized as "Extremely Hazardous Waste" by the RCRA Part A permit application) (Appendix A: Reference 7). The generation of this waste is the result of past Hanford defense production operations. These wastes are feed stock to the 242-A Evaporator. The process condensate produced by evaporation is categorized as a "Dangerous Waste" and is essentially water with only trace contaminants.

The chemistry associated with the various process waste streams in the facility (e.g., evaporator feed, double shell slurry feed, process condensate, cooling water, and steam condensate) are classified as dangerous waste streams. The current chemical composition of these waste streams is the same as those reported in the facility's baseline integrity assessment. Therefore, the waste characterization evaluation of the streams that was performed for the 1993 IAR is still valid for this IAR. (See Appendix G: Table G-4 for bulk chemistry.)

2.3 Tank System Age

Construction of the 242-A Evaporator was completed in 1977 at which time it became operational. The facility's original design life was ten years (Appendix A: Reference 1). The TK-C-100 Condensate Catch Tank was fabricated in 1951 as part of another project; however, this catch tank was never used on that project. The tank was upgraded in 1977 to be consistent with the 242-A Evaporator facility design standards and installed in the 242-A facility. As a result of Project B-534, some facility components were upgraded or replaced. These components were evaluated in

the last 242-A facility integrity assessment (Appendix A: Reference 13) and not identified for special evaluation for this integrity assessment.

Those components that were affected by Project B-534 are noted here for historical record. They include:

Components	Year
E-C-1 Primary Condenser	1990
P-B-1 Pump	1990
P-B-2 Bottoms Pump	1990
Miscellaneous Process Piping	1990

The 242-A Evaporator is conveniently described by seven subsystems according to the function or process of each subsystem as described below. Four of the subsystems store, transport or treat Washington State dangerous wastes, the other three subsystems do not.

2.4 Potential for Corrosion Failure

The conclusion of this IAR concerning corrosion failure is that the facility is in good condition and can continue operation. This conclusion is based on ultrasonic testing data of various systems, and a comparison of this data with similar data for the 1993 integrity assessment. The technical support for this conclusion is that the types of dangerous wastes currently available for processing in the facility have not changed since the facility became operational in 1977. Ultrasonic tests made of the wall thicknesses for the evaporator/reboiler loop, condensate catch tank (TK-C-100), and process condensate condensers made in 1993 and 1998, are essentially the same, and are within the margin of error of the testing equipment. This indicates that there has been no measurable or noticeable deterioration of the tank system's integrity. See Appendix E for comparison of the two sets of UT data.

Also, a corrosion evaluation, based on the UT data for this integrity assessment, verified that the chemistry of the waste streams introduced to the facility have had a minimal effect on the equipment. Therefore, the conclusions concerning corrosion failure that were arrived at in the 1993 IAR remain valid for this report.

The following are general comments concerning corrosion failure:

- The materials of construction, system design, and protective coatings for the 242-A facility tank system provide adequate corrosion protection and compatibility with Hanford defense wastes and the process streams generated within the facility. The wall thicknesses of the equipment and piping are above the "T-nom" thickness minus the mill tolerance which is the minimum thickness expected during original construction (see Appendix E: E-1). This is consistent with the results of the 1993 IAR.

- The 242-A Evaporator corrosion protection program consists of materials, methods of construction, and control the process chemistry for the liquid waste environments. The facility components and piping are constructed primarily of austenitic stainless steels and low alloy carbon steels. Gaskets at component and piping connections are chemically resistant non-metallics. Each subsystem was designed for specific operating parameters and material/environment compatibilities.

- Based on the corrosion evaluation, it is recommended that all accessible equipment and grid points that were tested in for the 1993 integrity assessment be tested during the next integrity assessment. That will provide for a more extensive corrosion rate evaluation, and a more exhaustive evaluation can be made to establish the remaining equipment life (see Appendix E).

2.5 Leak Test and System Walkdown

Hydrostatic leak tests were performed on the C-100 Condensate Catch Tank and the Evaporator/Reboiler loop. The criteria for acceptable leak tests of these systems was "no detectable leaks" over a 24 hour period.

The leak test data and walkdown inspection results were reviewed and sign off by the 242-A Facility Cognizant Engineer and Quality Assurance representative. Final disposition of the condensate catch tank and evaporator/reboiler loop is: "System and components are

acceptable based on the inspection results. No further evaluation is required."

2.5.1 C-100 Condensate Catch Tank Leak Test: This leak test was conducted with the same criteria as the 1993 integrity assessment (Appendix A: Reference 13). This test was conducted in accordance with process memo LW98-026 (Appendix D: D-1). The leak test duration was 24 hours and the result was that the system passed the test on the first attempt.

2.5.2 Evaporator/Reboiler Loop Leak Test: The leak test for the evaporator/reboiler loop was conducted in accordance with process memo LW98-44 (Appendix D: D-3). The leak test duration for this system was 28 hours. The evaporator/reboiler loop was filled with 27,507 gallons of water as measured on the LIC-CA1 liquid level indicator. Liquid level measurement readings of the loop were taken every hour during the test. The liquid level varied from plus 5 gallons to minus 11 gallons from the initial liquid level in the loop. These variations are within the operating range of the level measuring equipment and the minor temperature fluctuations in the system. Readings were taken on tank 241-AW-102, the evaporator drain tank, before and after the test. During the leak test, seal water for the recirculation pump, P-B-1, was routed to Tank 241-AW-102. This accounts for the liquid level increase in Tank 241-AW-102.

2.5.3 Visual Inspection of Evaporator/Reboiler Room Concrete Coating: During the visual inspection of the evaporator/reboiler equipment in the evaporator/reboiler room, an inspection of the secondary containment concrete and special protective coating (floor and partial wall) was performed. There were no signs of deterioration or wear of the protective coating (see Appendix D: D-2 and D-3).

However, the corrosion evaluation performed had one concern about the concrete coating that may come in contact with the waste. That concern is that the coating material is not recommended for immersion services and may not be suitable for this application. The current material being used is a chemically resistant acrylic coating (Carboline D3358 primer and Carboline D3359 topcoat). It is recommended that

several concrete coating/lining manufactures (e.g., Ameron, Standard, Plasite, Koch) be consulted for recommendations on the optimum concrete lining for this service (see Appendix E).

2.6 Future Integrity Assessments

2.6.1 Future Integrity Assessment Frequency: The 1993 IAR established a repeat integrity assessment frequency of five years/8,000 hours of operation between interim integrity assessments. The basis for the five year/8,000 hour frequency is that the 242-A Evaporator has an inherent corrosion protection, stringent operational controls, and aggressive preventative programs in place.

Based upon the findings of this IAR, it is recommended that the next facility integrity assessment is performed be no later than July 15, 2008 (ten years after submittal of this IAR.) The basis for this recommendation is that the results of the ultrasonic testing is the "minimum remaining life" for all the equipment tested is greater than 20 years (see Appendix E: E-1). This is with the exception of the E-C-1 condenser, which has a minimum projected remaining life of greater than 13 years. The remaining life estimates are based on the minimum measured thickness (in 1993 or 1998), the average corrosion rate and the nominal Thickness minus the Mill Tolerance thickness. When this thickness is approached, an actual minimum thickness, based on the design pressure and applicable codes can be determined.

In the event of significant off-normal events, such as earthquakes or major process upsets, procedures and mechanisms are in place through the DOE Order system to ensure orderly shut down and complete review of facility integrity prior to restart.

2.6.2 Future Integrity Assessment Scope: The scope of future integrity assessments should include the process subsystems assessed by this report. In addition to WAC

dangerous waste requirements, future integrity assessments should include:

- Complete visual walkdown of the facility and components for the types of degradation identified in paragraph 2.4 of this IAR[1].
- Repeat leak tests of evaporator/reboiler loop and condensate catch tank in accordance with an IQRPE approved leak test plan.
- Repeat ultrasonic testing for wall thickness of components using the same locations and grids to the maximum extent possible[1]. This data should be compared with the data included in previous IARs and this IAR for trends.
- Review of significant changes (if any) in national consensus codes and standards and DOE Orders for design and construction of this facility.
- Review of off-normal operational events.

[1] Consideration should be given to the cost/benefit of repeat UT and visual inspections for locations where accessibility and as low as reasonably achievable dose rates may be prohibitive.

3.0 INTEGRITY ASSESSMENT CERTIFICATION

"I have reviewed this document and believe the inspections, tests, and analyses described herein are sufficient for assessment of the tank system integrity in accordance with Washington Administrative Code Section 173-303-640(2)."

"I certify under penalty of law, that I have personally examined, and am familiar with, the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Sherman R. Tifft 6-22-98

Sherman R. Tifft
Fluor Daniel Northwest, Inc.
Registered Professional Engineer
Washington State PE Registration #18708
Expiration Date: May 22, 1999

Date

(Original signed and sealed 6-22-98)

ATTACHMENTS

Appendix A (REFERENCES)

REFERENCES

1. HNF-SD-WM-SAR-023, Rev. 2-D, "242-A Evaporator Safety Analysis Report."

2. State of Washington, Washington Administrative Code, Chapter 173-303, "Dangerous Waste Regulations", January, 1989.

3. WHC-SD-WM-WP-056, Rev. 1, "242-A Evaporator/Reboiler System Evaluation."

4. DOE-RL, Hanford Plant Standard, SDC-4.1, Rev. (1972), "Standard Arch-Civil Design Criteria."

5. DOE-RL, Hanford Plant Standard, SDC-4.1, Rev. 11, "Standard Arch-Civil Design Criteria."

6. RHO-SD-WM-TI-003, Rev. 0, "Compilation of Basis Letters and Communications Referenced in 242-A Evaporator/Crystallizer Specifications."

7. DOE/RL, 1997a, "242-A Dangerous Waste Permit Application", DOE/RL-90-42, Rev. 1, 1997, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

8. Internal Memo #23460-90-105, P. C. Ohl to J. E. Geary, 8/22/90, "Operating Parameter Calculations & References."

9. Operating Procedure TO-600-040, current revision, "242-A Evaporator-Crystallizer Operation."

10. Double Shell Tank Operating Specification Document, OSD-T-151-00007, current revision.

11. HNF-SD-WM-SEL-028, Rev. 1, "Safety Equipment List 242-A Evaporator."

12. HNF-2331, Rev. 0, "1998 Interim 242-A Evaporator Tank System Integrity Assessment Plan."

13. WHC-SD-WM-ER-124, Rev. 1, "242-A Evaporator-Crystallizer Tank System Integrity Assessment Report"

14. WHC-SD-WM-WP-019, Rev. 0, "Data Package for 242-A Evaporator/Crystallizer Tank System Integrity Assessment Report"

15. LW98-026, Process Memo, "TK-100 Leak Test Instructions," dated March 27, 1998.

16. LW98-044, Process Memo, "242A Evaporator Vessel Integrity Test/Boiler Test," dated May 12, 1998.

17. EL-98-00009/W (Generic Work Item), "242-A C-100/C-A-1 Tank Integrity Assessment," January 7, 1998.

Appendix B (WASTE CHARACTERIZATION)

WASTE CHARACTERISTICS

The 242-A Evaporator receives and treats mixed waste, which is dangerous waste combined with radioactive components, from the double-shell tanks. The dangerous waste portion is categorized as an "Extremely Hazardous Waste" by the Washington State Resource Conservation and Recovery Act (RCRA) program. The facility treats the waste by evaporation, separating it into concentrated slurry and dilute process condensate. Both of these streams are also Washington State RCRA dangerous wastes. The Steam Condensate, Raw Water, and Non-Condensable Gases generated by the evaporator process, through subsystems 3, 5, and 6 (paragraph 1.2 of this report), are not Washington State dangerous wastes.

Evaporator Feed Composition

The 242-A Evaporator receives a mixed blend of feed from tanks throughout the double-shell tank system via the Evaporator Feed Tank, 241-AW-102. The feed contains liquid waste from chemical processing operations, facility deactivations, and miscellaneous facility and laboratory discharges. The largest portion of wastes are non-radioactive aqueous salts. The feeds are highly alkaline (pH>12) and the primary chemical compounds are sodium compounds of hydroxide, nitrite, nitrate, aluminate, carbonate and sulfate. The feed may also contain minor amounts of organic material (<7g/L). The approximate maximum concentrations of the most abundant salts and ammonia are noted in Table B-1, below

The chemical composition of the evaporator feed will vary from run to run and can range from essentially water to saturated solution.

The principal radionuclides in evaporator feed are Cs-137, and Sr-90. Minor and trace quantities of other radionuclides are also present. Similar to the chemical constituents, the concentrations or radionuclides in the feed varies as a function of source and blending.

Table B-1: Chemical Composition of Evaporator Feed

COMPOUND	MAXIMUM CONCENTRATION (M)
NaOH	3.9
$NaNO_3$	2.8
$NaNO_2$	1.8
$NaAlO_2$	1.8
$NaCO_3$	0.7
Na_2SO_4	0.2
Na_3PO_4	0.5
NH_3	0.11
NaF	0.07

Slurry Compositions

Prior to the previous 242-A Evaporator integrity assessment, slurry waste was concentrated to three basic forms. These forms were Dilute Double-Shell Slurry Feed (DDSSF), Double-Shell Slurry Feed (DSSF), and Double-Shell Slurry (DSS). Concentration is performed at the 242-A Evaporator in passes, each pass assumes 50% water removal from the feed solution. DSS is slurry that has been concentrated past the sodium aluminate saturation boundary where massive crystallization/precipitation occurs. DSSF is concentrated slurry which is one pass away from becoming DSS. Due to tank farm requirements imposed prior to the previous integrity assessment, the sodium aluminate boundary is no longer the controlling factor for target slurry concentrations, but is typically driven by specific gravity (SpG) limits. Therefore, the terms DDSSF, DSSF, and DSS will not be used. Instead, the product will be referred to as concentrated slurry. The maximum concentration of the concentrated slurry is shown in Table B-2.

Table B-2: Chemical Composition of Concentrated Slurry

COMPOUND	MAXIMUM CONCENTRATION (M)
NaOH	5.5
$NaNO_3$	5.0
$NaNO_2$	2.5
$NaAlO_2$	2.5
$NaCO_3$	1.2
Na_2SO_4	0.3
Na_3PO_4	0.1
NH_3	0.15
NaF	0.6

Appendix C (DRAWING LIST)

Table C-1: Applicable Drawing List

No.	P&ID DRAWING TITLE	DRAWING NUMBER
1	Drawing Index	H-2-98970
2	Process Condensate System	H-2-98990, Sht. 1 (Rev. 8, dated 10/96)
3	Steam Condensate System	H-2-98993, (Rev. 11, dated 9/97)
4	Used Raw Water System	H-2-98994, (Rev. 8, dated 10/97)
5	Drain System	H-2-98995, Sht. 1, (Rev. 10, dated 10/97)
6	Drain System	H-2-98995, Sht. 2, (Rev. 4, dated 3/95)
7	Evaporator Recir. System	H-2-98988, Sht. 1, (Rev. 4, dated 11/96)
8	Evaporator Recir. System	H-2-98988, Sht. 2, (Rev. 4, dated 10/96)
9	Vacuum Condenser System	H-2-98999, Sht. 1, (Rev. 10, dated 8/96)
10	Vessel Vent System	H-2-98998, Sht. 1, (Rev. 10, dated 6/95)

Appendix D (SUPPORTING DOCUMENTATION)

D-1: TK-C-100 Leak Test Instructions

PROCESS MEMO

PM# LW98-026 Page 1 of 6
EXPIRATION DATE: N/A

FROM: 200 Area Liquid Waste Processing Facilities Engineering
PHONE: 373-4894 S6-72
DATE: March 27, 1998
SUBJECT: TK-C-100 Leak Test Instructions

To: Shift Operations Managers

R. R. Bloom	S6-71
D. L. Flyckt	S6-71
J. L. Foster	S6-71
J. E. Geary	S6-71
R. J. Nicklas	S6-72
J. M. Petty	S6-71
R. M. Gordon	S7-55
N. J. Sullivan	S6-72
B. H. Von Bargen	S6-72
D. J. Williams	S7-41
R. A. Wahlquist	S6-72
M. A. Bowman	S6-72
D. A. Selle	S6-74
C. E. Jensen	R1-56
S. R. Tifft	B7-41
Process Memo File	2025EA/D3
200 Area LWPF RCC	2025EA/D5

This Process Memo provides Leak Test instructions for the TK-C-100 as part of the 242-A Integrity Assessment. This test is being conducted under the overview of an Independent Qualified Registered Professional Engineer (IQRPE). It is not necessary for State inspectors to witness the test, nor is it necessary to notify the State of the date and time of the test. Results of the leak test will be reported to the Washington State Department of Ecology with the final submittal of the 242-A Integrity Assessment.

The external portions of the components, piping, flanges and valves will be examined for evidence of leaks in accordance with the guidelines of ASME Section XI, Division 1, class 3 (1989), IWA-5240 "Visual Examination" (VT-2), and IWD-5000 "System Pressure Tests Visual Examination methods" (VT-2).

If any leaks are observed, follow-up engineering analysis shall be conducted to identify the type and extent of repairs required.

This test will encompass a fill to just below the High level alarm of the TK-C-100 tank as read on instrument WFIC-C100. The level will be filled to 65% as read on WFIC-C100 per TO-600-190 section 5.3, "Overflow TK-C-100 during shutdown". The following steps will not be performed in TO-600-190, 5.3.1, 5.3.2, 5.3.6, 5.3.8, 5.3.10-5.3.13. This procedure is designed to overflow TK-C-100, however, for this leak test it is only necessary to fill the tank to the 65% level. Perform steps 5.3.3, 5.3.4, 5.3.5, 5.3.7, and 5.3.9 ensuring that the level is only filled to 65% as read on WFIC-C100, NOT OVERFLOW.

This level will be maintained for a 24 hour hold period. The tank level at the start of the 24 hour hold period will be recorded and the tank level will be monitored every hour on WFIC-C100 and recorded on Data Sheet #1.

System operator shall call QC at the start of the 24 hour hold time. (This call is to provide QC with an independent verification of 24 hour hold start time.)

Every four hours the tank will be walked down to determine if leaks are visible or whether liquid is accumulating on the floor of the condenser room, on the pipes, or equipment, and the results will be recorded on Data Sheet #2.

Small erratic up and down variations of liquid level can be due to expansion and contraction due to temperature changes, this would not be a cause for concern. However, a slow steady downward trend in level is more likely to be indicative of a leak.

If the water level begins to drop noticeably meeting the criteria established below, notify the 242-A cognizant engineer so an evaluation of the situation can be made. The engineer shall decide if continuing with the leak test is appropriate.

Leak Criteria:

Decreasing trend in TK-C-100 as read on WFIC-C100 level of 1% or more during the 24 hour hold period

and

Any visual evidence of a leak discovered during an inspection of the tank and condenser room floor. Operations shall inspect the TK-C-100 tank every four hours during the hold period.

If no leak is visually verified and level is decreasing, a boundary valve check shall be made to verify integrity and determine if valves are leaking. Vessel may be filled to the 65% level as read on WFIC-C100 as long as the volume added does not exceed 500 gallons (approximately three and one half inches).

After a minimum of 24 hours, the QC inspector shall inspect the exposed portions of the TK-C-100 tank and connecting piping. The inspector shall examine external accessible areas of the tank paying particular attention to the welds, joints, and seams. The visual examination will also be performed of the pipe surfaces next to structural supports for evidence of wear caused by vibration. The bottom side of the tank with the associated drain line will also be visually verified to have no leaks. Operations and QC inspectors will fill out Data Sheet #3 with visual inspection results.

After the completion of the visual examination and condensate drain line inspection, the 242-A cognizant engineer shall review the observations and accept or reject the results as identified by signature on data sheet #3.

The acceptance criteria for this test are NO DETECTABLE LEAKS.

Concurrence:	Completed
Cognizant Engineer	Operations Manager or Delegate — Date 5-11-98
Cognizant Engineering Manager or Delegate — FOR RJ Wicklas	
Operations Manager or Delegate	Cognizant Engineer — Date 5-12-98
Date 3-31-98	

PMH LW98-026 PAGE 4 of 6

WS W.S. Dabling W.S. Dabling

DATA SHEET #1
TK-C-100 TANK LEVEL INSPECTION

	DATE	TIME	TANK LEVEL WFIC-C100	RECORDED BY
	4-28-98	0800	65.2	WS Dabling WS Dabling
	4-28-98	0900	65.2	WS Dabling
	4-28-98	1000	65.2	WS Dabling
	4-28-98	1100	65.2	WS Dabling
	4-28-98	1200	65.2	WS Dabling
	4-28-98	1300	65.2	WS Dabling
	4-28-98	1400	65.2	WS Dabling
	4-28-98	1500	65.2	WS Dabling
	4-28-98	1600	65.2	WS Dabling
	4-28-98	1700	65.2	WS Dabling
	4-28-98	1800	65.2	WS Dabling
	42898	1900	65.3	SC Burt
	42898	2000	65.3	SC Burt
	42898	2100	65.3	SC Burt
	42898	2200	65.3	SC Burt
	42898	2300	65.3	SC Burt
*	42898	0000	65.3	SC Burt
*	42898	0100	65.3	SC Burt
*	42898	0200	65.3	SC Burt
*	42898	0300	65.3	SC Burt
*	42898	0400	65.3	SC Burt
*	42898	0500	65.2	SC Burt
*	42898	0600	65.2	SC Burt
*	42898	0700	65.2	WS Dabling
	~~4-28-98 0800~~			
*	4-28-98 - 0800		65.2	WS Dabling

NOTE: All DATES with AN "*" IN FRONT Should be 4-29-98.

PMH LWR9-026 PAGE 5 of 6

DATA SHEET #2

TK-C-100 4 HOUR VISUAL INSPECTION

DATE	TIME	OBSERVATION	RECORDED BY
4-28-98	1200	OK	JB
4-28-98	400	OK	JB
4-28-98	2800	OK	SCB
4-29-98	00:00	OK	SCB
4-29-98	0400	OK	SCB
4-29-98	0800	OK	JB

PM# LW98-026 PAGE 6 OF 6

DATA SHEET #3

TK-C-100 TANK LEAK TEST VT

Time and Date when vessel was Filled: 1051 4-27-98 WD

Time and Date when inspection began: 0800 - 4-28-98 WD

(1) Shell of tank:

NO LEAKS

(2) Connections to tank:

(2.1) To P-C-100 isolation valve:

NO LEAKS

(2.2) To Tank Drain Valve:

NO LEAKS

Operations: W.S. Dobbing 0845 4-29-98 [signature] 4-29-98

QC Inspectors: M.F. Bishop 4-29-98

Comments:

✓ System and components are acceptable based on the inspection results. No further evaluation is required.

____ System and components require further evaluation. Reference:

242-A Cognizant Engineer: [signature] Date: 4/30/98

Quality Assurance: [signature] Date: 4/30/98.

D-2: Inspection and Test Personnel Certification

To: Certification File

cc:

INSPECTION AND TEST PERSONNEL CERTIFICATION LETTER

This letter certifies that DAVID H. POYNTER, payroll number 88783, has successfully met the qualification requirements as specified in WHC-CM-4-5, *Quality Assurance Qualifications and Instructions* manual. Refer to attached *QA Inspection Personnel Qualification Checklist* for basis of certification.

Mr. Poynter is hereby certified to perform Mechanical inspections as a Level II inspector for Babcock & Wilcox Hanford Company.
(Company Name)

THIS CERTIFICATION IS VALID FOR 3 (No.) YEARS THRU 10/99 (Mo./Yr.)

X [signature] 10/8/96
(Signature of Certifier) (Date)

B&W QA Manager
(Title of Certifier)

A-6000-795 (09/95)

INSPECTION PERSONNEL QUALIFICATION CHECKLIST

Company Name Duke Engineering & Services Northwest

Name DAVID H. POYNTER Payroll No. 88783

QA Inspection Discipline MECHANICAL Level II

EDUCATION, TRAINING, AND EXPERIENCE BACKGROUND

Education Level	Training	Experience	Documented Total Number of Hours/Years in Applicable QA Inspection Discipline
[X] High School (GED)	*> 24 hrs	**> 3 yrs	
[ ] Two Year College	* Includes 2 hours of refresher training.		
[ ] Four Year College	** Previously certified.		

Verified By: D.R. Gregory Date 10/08/96

QUALIFICATION EXAMINATION RESULTS

Test Section	No. Questions	Administered By		Date
General	75	Dan R. Gregory (Print)	D.R. Gregory (Sign)	10/08/96
Practical	N/A	(Print)	(Sign)	
Specific	N/A	(Print)	(Sign)	
			Minimum Points Passing:	80%

OTHER

Visual Acuity Examination

Verified By: D.R. Gregory Date: 10/08/96

Annual Reevaluations

Verified By: D.R. Gregory Date: 10/08/96

I have reviewed the above qualifications and determined the candidate meets the Qualification requirements of a Level II in accordance with WHC-CM-4-5.

D.R. Gregory
Level II Signature

10/08/96
Date

This Qualification is valid for 3 (No.) years through 10/99 (Month/Year).

A-6000-800 (09/96)

D-3: Evaporator Vessel Integrity Test/Boiler Test

PROCESS MEMO

PM# LW98-44 Page 1 of 10
EXPIRATION DATE: 10/1/98

From: 200 Area Liquid Waste Processing Facilities Process Engineering
Phone: 373-4894/373-1151
Date: May 12, 1998
Subject: 242A Evaporator Vessel Integrity Test/Boiler Test

To: Shift Operations Managers

B. D. Biddle	S6-74
R. R. Bloom	S6-71
D. L. Flyckt	S6-71
J. L. Foster	S6-74
T. M. Galioto	S6-72
J. E. Geary	S6-71
R. M. Gordon	S7-55
M. D. Guthrie	S6-72
C. E. Jensen	R1-56
E. Q. Le	S6-72
R. Mabry	S6-71
R. S. Nicholson	S5-05
R. J. Nicklas	S6-72
J. M. Petty	S6 74
N. J. Sullivan	S6-72
S. R. Tifft	B7-41
B. H. Von Bargen	S6-72
D. J. Williams	S7-41
Process Memo File	2025EA/D3
200 Area LWPF RCC	2025EA/D5
East Tank Farms Shift Office	S5-04

BACKGROUND

This Process Memo provides Leak Test instructions for the Evaporator Recirculation Loop as part of the 242-A Integrity Assessment and Boiler test. The Vessel Integrity Test is being conducted under the overview of an Independent Qualified Registered Professional Engineer (IQRPE). It is not necessary for state inspectors to witness the Integrity Test nor is it necessary to notify the state of the date and time of the test. Results of the Integrity Test will be documented in the final 242-A Integrity Assessment Report (IAR), which will be retained in the 242A Evaporator Regulatory File.

The external portions of the components, piping, flanges, welds and valves will be examined for evidence of leaks. The walkdowns shall be performed by PNNL certified mechanical inspectors.

If any leaks are observed, follow-up engineering analysis shall be conducted to identify the type and extent of repairs required.

Water will be the process solution used in the Evaporator Vessel CA1 for testing. Integrity testing will be performed after the CA1 Vessel is filled. At the completion of the integrity test, the JCI Package Boilers will be tested to verify adequate boiler capacity. After both tests are complete, the Evaporator vessel will be dumped to 102-AW. The corresponding East Tank Farms operational support has been specified in PM# [redacted].

Total waste generation to tank farms is anticipated as follows (1 week estimated testing period):

CA1 vessel fill (27500 gal)	=	27500 gal
PB1 seal water (7d*.5 in/day*2750)	=	9600 gal
[redacted]	=	5000 gal
Total waste generation to tank farms	=	[redacted] gal ([redacted] in)

NOTE - TK-102-AW is limited to receive not more than 150,000 gallons from FY98 Evaporator Activities (Integrity Assessment + Boiler Test + Cold Run).

INSTRUCTIONS

1.0 Perform initial valve/electrical lineups/verification per TO-600-010 *Perform Initial Valving Verification for 242-A Evaporator* and TO-600-015 *Perform Initial Electrical Verification for 242-A Evaporator*.

Completed: _____ 5/31/98
SOM Signature Date

2.0 Install CA1 vessel dump valve locking screws to prevent inadvertent loss of vessel contents during integrity assessment.

Completed: _____ 12 May 98
SOM Signature Date

3.0 Perform prestart operations per TO-600-025 *Perform 242-A Evaporator System Status Check and Prestart Operation for Training.*

3.1 Comp W. Morris Notify Tank Farm SOM of upcoming PB-1 Seal Water flow to 102-AW.

3.2 Composite samplers do not require startup.

Completed: [signature] / 5/31/98
SOM Signature Date

4.0 Switch Seal Water System from filtered raw water to process condensate per TO-600-210 *Operate PB-1 and PB-2 Seal Water Filter System* as C-100 levels permit. The goal is to maximize the available volume in TK-C-100 for the Boiler Test.

Completed: [signature] / 6/1/98
SOM Signature Date

5.0 Fill Vessel with raw water from slurry flush line using HV-CA1-2 per TO-650-140 *Flush 242-A Evaporator Vessel and Recirculation Loop*, TASK 5.1 to a level of 27,400 - 27,500 gallons as read on either LIC-CA1-1 or LIC-CA1-2. Whichever indicator is used to determine the initial level must be used throughout the Integrity Test and circled on Data Sheet #1.

5.1 Do Not Start PB-1 during the Integrity Assessment.

Completed: [signature] / 6-1-98
SOM Signature Date

6.0 INTEGRITY ASSESSMENT

6.1 HOLD PERIOD

This level will be maintained for a minimum 24 hour hold period. The vessel level at the start of the 24 hour hold period will be recorded and the vessel level will be monitored every hour on either LIC-CA1-1 or LIC-CA1-2, whichever was circled on Data Sheet #1 from step 5.0 above, and then recorded on data sheet #1.

The liquid level should remain constant throughout the 24 hour hold period, and no additional liquid should be required to maintain the level. Small, erratic, up and down variations in liquid level indication may be due to expansion and contraction due to temperature changes- this would not be cause for concern. However, a slow steady downward trend in level is more likely to be indicative of a leak.

If the liquid level begins to drop noticeably, notify the 242-A cognizant engineer so an evaluation of the situation may be performed. The cognizant engineer shall decide whether to continue with the leak test. If either criteria listed in section 6.2 is met, the 24 hour hold period shall be terminated and the cognizant engineer notified.

6.2 ABORT CRITERIA

6.2.1 Three successive hourly increases in the sump level totalling 1 inch or more, or, a cumulative level rise in the sump of 2 inches or more over the entire 24 hour hold period.

6.2.2 Any visual evidence of a leak as viewed through the lead glass windows of the pump room. Visual observations will be conducted every four hours during the hold period. Results will be recorded on the C-A-1 four hour visual inspection data sheet #2.

6.3 CONDUCT VISUAL EXAMINATION FOR LEAKS

After a minimum of 24 hour hold time, a PHMC Level II Mechanical Inspector shall inspect the exposed sections of the 242A Evaporator Vessel and Reboiler and all connecting piping, flanges, welds, fittings and valves for signs of leakage. Also, inspect the SPC floor coating for signs of deterioration or wear. This information is recorded on Data sheet #3.

6.4 ACCEPTANCE CRITERIA

The acceptance criteria for this test is NO Detectable Leaks.

6.5 After completion of the visual examination the cognizant engineer shall review the observations and accept or reject the results (check appropriate blank an design attached data sheet).

Subsequently, the QC Inspector shall present the inspection results to QA. If QA, QC, and 242A Operations agree that no leaks have been detected, proceed with this Process Memo.

7.0 After Integrity Assessment field activities are completed, reduce the level in the vessel.

✓7.1 Notify Tank Farms SOM of intentions to empty a portion of CA1 to 102 AW.

7.2 Perform a partial drawdown of CA1 to 102 AW by opening HV CA1-1 and monitoring until the CA1 level reaches 24,500-25,000 gal as read on LIC CA1-1 or LIC CA1-2.

Completed: [signature] , 6-3-98
SOM Signature Date

8.0 Perform TO-600-035 *Start Up 242-A Evaporator for Training* for Boiler Test.

8.1 Establish vessel vacuum at 60 TORR.

8.2 Deentrainer spray startup is optional.

8.3 NO slurrying out to 106-AW.

8.4 Record values on the Boiler Test Data Sheet during reboiler steam flow startup and in 5% increments as read on FIC-TA1-1 during operation until 100% open.

8.5 Continue Boiler Test by attempting to maximize steam flow through the reboiler, as condensate pressure allows.

8.6 Use HV-GA1-2 as a source for makeup water in the vessel as needed to obtain maximum boil-off.

8.7 If necessary, IK-C-100 may be reduced using valve 1-3A to 102-AW. Do not drain more than 5,000 gal. This option is only a backup to using the Process Condensate Recycle System for C-100 drawdown.

8.8 Terminate test after maximum boil-off is reached.

Completed: David A. Sellie, 6/4/98
SOM Signature Date

9.0 Shutdown Evaporator per TO-600-065 *Shutdown 242-A Evaporator for Training* and perform a controlled dump to 102-AW.

9.1 Remove dump valve locking screws.

9.2 Notify Tank Farm SOM prior to beginning the controlled dump.

9.3 Do not transfer any liquid through the slurry line.

Completed: [signature], 6-4-98
SOM Signature Date

MISCELLANEOUS

Filter changes/cleaning - FH-filters and sockfilter changeout/cleaning should be conducted prior to swing shift.

FC-4 and FC-5 filters shall be changed per TO-600-180. Cleaning and switching the seal water sock filters is to be performed per TO-600-210.

OSR Rounds - OSR rounds shall be performed during the Boiler Test/Integrity Assessment.

Concurrence	
Cognizant Engineer	5-27-98 Date
Cog. Manager/Delegate	5/28/98 Date
SQ Manager/Delegate	5/27/98 Date

Completed by:	
SQ Manager	6/5/98 Date
Cognizant Engineer	6/5/98 Date

Pm# LW98-044 PAGE 7 of 10

DATA SHEET #1

EVAPORATOR VESSEL/RECIRCULATION LOOP LEVEL INSPECTION

DATE	TIME	LEVEL (LIC-CA1-1) LIC-CA1-2	RECORDED BY
start → 6/1/98	0430	27,507	[illegible]
6/1/98	0530	27,507	[illegible]
6-1-98	0630	27,511	SCB
6-1-98	0730	27510	SCB
6-1-98	0830	27513	SCB
6-1-98	0930	27510	SCB
6-1-98	1030	27512	SCB
6-1-98	1130	27510	SCB
6-1-98	1230	27507	SCB
6-1-98	1330	27505	SCB
6-1-98	1430	27503	SCB
6-1-98	1530	27498	SCB
6-1-98	1630	27498	SCB
6-1-98	1730	27499	SCB
6-1-98	1830	27499	ABH
6-1-98	1930	27499	ABH
6-1-98	2030	27499	ABH
6-1-98	2130	27497	ABH
6-1-98	2230	27496	ABH
6-1-98	2330	27498	ABH
6-2-98	0030	27497	ABH
6-2-98	0130	27498	ABH
6-2-98	0230	27501	[illegible]
6-2-98	0330	27500	ABH
6-2-98	0430	27503	ABH
6-2-98	0530	27504	[illegible]
6-2-98	0630	27505	[illegible]
6-2-98	0730	27509	[illegible]

Pm # LW98-044 PAGE 8 of 10

DATA SHEET #2

EVAP VESSEL/RECIRCULATION LOOP 4 HOUR VISUAL INSPECTION

DATE	TIME	OBSERVATION	RECORDED BY
6/1/98	0930	NO Leaks	SLB
6/1/98	1230	NO Leaks	SLB
6/1/98	1630	NO Leaks	SLB
6/1/98	2030	No leaks	KEA
6/2/98	0030	No leaks	KEA
6/2/98	0430	No leaks	KEA
6/2/98	0330	No leaks	KEA

PM# LW98-044 PAGE 9 OF 10

DATA SHEET #3

EVAPORATOR VESSEL/RECIRCULATION LOOP LEAK TEST VT

Time and Date when Vessel was Filled: 6/1/98 04:31

Time and Date when inspection began: 6/3/98 1045

(1) Connections:

(1.1) From C-A-1: SEE COMMENTS BELOW 6-398

(1.2) To P-B-1: _____

(1.3) From P-B-1: _____

(1.4) To E-A-1: _____

(1.5) From E-A-1: _____

(1.6) To C-A-1: _____

Operations: 6/5/98

QC Inspectors: 6398
DAVID H POYNTER B&W HANFORD NAV. II

Comments: INSPECTION WALKDOWN COMPLETED PER DIRECTION OF PROCESS MEMO PM# LW98-44 SECTIONS 6.3 & 6.4 WAS ACCEPTABLE NO OBVIOUS LEAKS WERE DETECTED.*

✓ System and components are acceptable based on the inspection results. No further evaluation is required.

____ System and components require further evaluation. Reference:

242-A Cognizant Engineer: _____ Date: 6/5/98

Quality Assurance: _____ Date: 6/5/98

*SPC FLOOR COATING SHOWED NO SIGNS OF DETERIORATION OR WEAR 6-398

PM# LW98-044 PAGE 10 of 10

1st Test 0% → 100%

BOILER TEST DATA SHEET #4

FIC-EA1-1 OUTPUT % (G13)	FIC-EA1-1 FLOW RATE (G13)	PI-STM-1 PRESSURE (G13)	PIC-CA1-7 OUTPUT % (G10)	PIC-CA1-7 PRESSURE (G10)	PI-EA1-13 PRESSURE (G13)	FI-EC2/EC3 FLOWRATE (G16)
5%	0	15.7	46	60.0	85.0	1166
10%	0	16.9	47	60.1	84.8	1165.1
15%	3200	16.6	46	60	84.9	1167
20%	4563	16.2	46	59.9	84.9	1170
25%	5780	15.6	46	59.8	84.8	1172
30%	7014	15.4	46	59.9	84.9	1170
35%	8395	15.36	46	59.8	84.7	1177
40%	9665	15.32	45	60.1	84.9	1174
45%	10820	15.24	45	59.6	84.8	1170
50%	11879	15.18	46	60.2	85.1	1178
55%	12723	15.11	45	60.3	84.8	1173
60%	13317	15.07	47	60.3	84.9	1169
65%	13848	15.02	46	60.1	84.9	1170
70%	14142	14.99	46	60.4	85.0	1172
75%	14592	14.93	47	60.4	85.1	1170
80%	15886	14.94	47	60.4	84.8	1168
85%	16400	15.07	46	60.0	84.8	1170
90%	16716	15.03	47	59.6	85.1	1176
95%	25649	14.03	84	63	84.93	1169
100%	25670	14.3	100	64	84.9	1166

boil off @ 93.5°F 5.4 gpm boil off

Also, start * make up to 0 to 90%. → 80%

→ relieved pressure. PIC-CA1-7 back down to 60

*. @ 90%, steve Burt cleans steam strainers. it jumps from 16,716 lbs/hr → 27,213 lbs/hr ↗ & stabilizes @ 26,176 lb
PIC-CA1-7 gets up from 47% → 75%

- After cleaning steam strainers, FIC-EA1-1 flow rate down from 27,213 → stabilized @ 25,600 even though 90% → 100%

[illegible] after blow down steam condensate

PM# LW98-044 PAGE 10 of 10

2nd Test
100% → 0%

BOILER TEST DATA SHEET #4

FIC-EA1-1 OUTPUT % (G13)	FIC-EA1-1 FLOW RATE (G13)	PI-STM-1 PRESSURE (G13)	PIC-CA1-7 OUTPUT % (G10)	PIC-CA1-7 PRESSURE (G10)	PI-EA1-13 PRESSURE (G13)	FI-EC2/EC3 FLOWRATE (G16)
100%	28104	14.158	~~66.48~~ 100%	66.48	84.72	1172.9
95%	22683	14.564	100%	67.36	84.88	1178.3
90%	21821	14.694	98%	67.93	84.90	1175.0
85%	21475	14.696	99%	66.82	84.84	1171.6
80%	21247	14.726	100%	66.73	84.90	1172.9
75%	20834	14.756	100%	66.46	85.05	1175.1
70%	21166	14.808	100%	66.19	84.90	1177.1
65%	20662	14.844	100%	65.90	84.85	1169.7
60%	19963	14.944	100%	65.23	85.07	1167.1
55%	19159	14.992	100%	64.98	84.88	1169.2
50%	17998	15.106	99%	64.41	84.91	1165.7
45%	16606	15.206	98%	63.78	84.86	1173.1
40%	15435	15.278	99%	62.91	84.88	1164.4
35%	14186	15.400	99%	61.74	84.91	1170.9
30%	12593	15.500	98%	61.79	84.78	1171.2
25%	11367	15.63	85%	59.36	84.82	1166.0
20%	10612	15.764	77%	58.77	84.82	1170.0
15%	9713	15.852	67%	57.80	84.83	1164.2
10%	8971	15.934	49%	56.81	84.82	1170.3
5%	8817	16.136	41%	57.85	84.85	1172.1
0%	8013	16.250	44%	59.11	85.10	1172.1

← After SC blow down

← Dave SOM wants to get done first so All of us can go to safety.

Note transmitter Screw.

If we do not have a good data, we can get them from Mac Teats MCS later.
Note that we have SC problem!

D-4: NDE UT Thickness Measurement Procedure and Test Report

Page 1 of ____

NDE ULTRASONIC THICKNESS MEASUREMENT PROCEDURE AND TEST REPORT

NONDESTRUCTIVE EXAMINATION
306E BLDG., 300 AREA - TEL. 376-6402

Job No. 98-7

Requester (client)	Company	MSIN	Bldg.	Area
T. GALIOTO/ S. TIFFT	RFSH	S6-72	2025EA	200E

Project/System/Work Package/Traveler No.
1998 242-A INTERIM EVAPORATOR TANK SYSTEM INTEGRITY ASSESSMENT PLAN

E-61749 REF. DOC. HNF-2331 REV 0

Acceptance Std. ____ Section ____ Para. ____ Date ____ [X] NA

PART INFORMATION

Material SS/CS
Wall Thickness ____ [X] NA
Diameter ____ [X] NA
Schedule ____ [X] NA
Size ____ [X] NA
Dwg. No. [ ] NA: SEE SKETCH
NCR [X] NA

PROCEDURE NO.
NDT-UT-9000, Revision No. 4
Appendix A Revision No. A

Special Technique No. [X] NA

COVERAGE
[X] 100% of Area Requested
[ ] Other ____

INSTRUMENTATION
Mfg. NORTEC Model 124-D
Standards Lab No. 584-31-50-022
Expiration Date 10/22/98

CALIBRATION STANDARD(S)
Standards Lab No. 584-99-30-091 C/S
Expiration Date 3/27/00
Standards Lab No. 584-99-30-135
Expiration Date 8/6/99

TRANSDUCER
Diameter 1/2"
Frequency 5 MHZ
Mfg. NORTEC
Serial No. 931422 932324
Stand Off NONE

Couplant ULTRAGELL II
Batch No. 8443

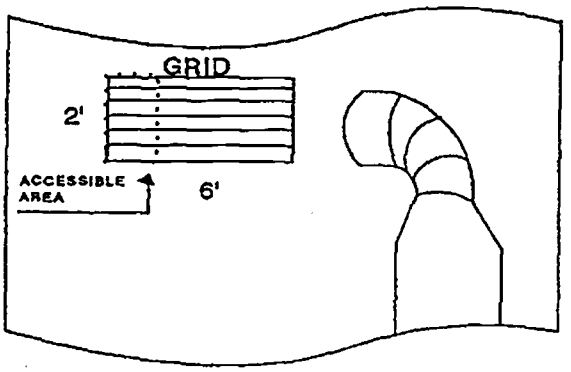
RESULTS

SEE ATTACHED SHEETS

Technician	UT Level	Interpreted by	UT Level	Reviewed by
W.D. PURDY W.D Purdy	I	JAMES N FURTH James N. Furth	II	W.D Nelson
BLANE HOPKINS B Hopkins	TRN			
Date of examination: 14 THRU 23 4/98		Date of examination: 14 THRU 23 4/98		Date: 4-30-98

A-6000-507 (02/98)

LOCATION 3 14 APRIL 1998
C-A-1 EVAPORATOR

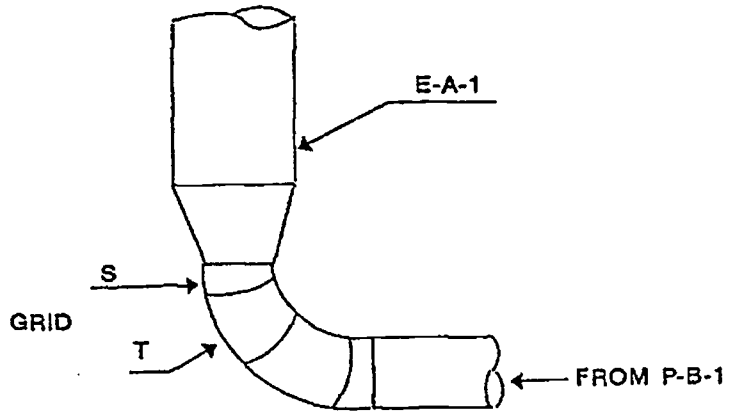


	1	2	3	4	5	6	7						
A	.385"	.387"	.386"	.396"	.387"	.386"							
B	.384"	.387"	.385"	.385"	.386"	.386"							
C	.384"	.386"	.386"	.385"	.385"	.386"							
D	.382"	.385"	.383"	.384"	.384"	.385"							
E	.383"	.382"	.382"	.381"	.381"	.381"							
F	.383"	.381"	.381"	.382"	.382"	.383"							
G	.383"	.382"	.381"	.382"	.381"	.383"							
H	.383"	.382"	.382"	.382"	.383"	.381"							
I	.384"	.384"	.384"	.385"	.384"	.385"							
J	.384"	.384"	.385"	.385"	.384"	.385"							
K	.383"	.383"	.384"	.383"	.383"	.381"							
L	.381"	.381"	.381"	.381"	.382"	.381"							

AVERAGE = 0.384" (0.975)

NOTE: AREA WAS VERY INACCESSIBLE, NO SCAFFOLD WAS PROVIDED
READINGS WERE TAKEN BELOW FLOOR GRATING
SCAN AREA STARTED AT UPPER LEFT CORNER OF GRID, 24" DOWN AND 12" RIGHT

LOCATION 5 14 APRIL 1998
LINE 1-1.2



DATA:(S)

	A	B	C	D
1	.271"	.252"	.253"	.264"
2	.269"	.264"	.257"	.269"
3	.268"	.267"	.262"	.269"

AVERAGE$_{(S)}$ = $\frac{\emptyset.264"}{(0.671\ cm)}$

DATA (T)

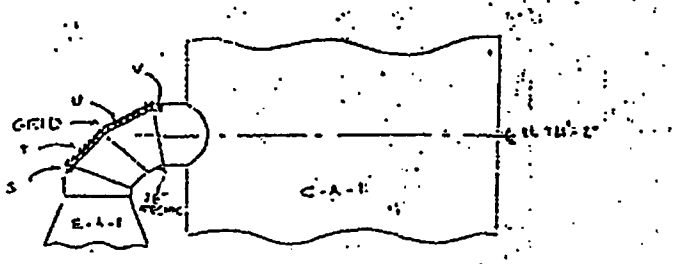
	A	B	C	D
1	.270"	.264"	.257"	.284"
2	.271"	.257"	.262"	.265"
3	.269"	.258"	.260"	.269"
4	.269"	.263"	.259"	.264"
5	.270"	.265"	.262"	.264"
6	.270"	.261"	.264"	.261"
7	.263"	.265"	.260"	.264"
8	.265"	.264"	.263"	.269"
9	.272"	.254"	.266"	.266"
10	.266"	.263"	.264"	.263"
11				

AVERAGE$_{(T)}$ = $\frac{\emptyset.265"}{(0.673\ cm)}$

LOCATION 7 14 APRIL 1998
LINE 1-1.4

COMPONENT: LINE NO 1-1.4 (¼" THK SS)
DESCRIPTION: 6" WIDE ALONG LENGTH OF MITERED ELBOW, TO EXTEND 3" ON EACH SIDE
GRID: 2" GRID

SKETCH.



DATA:(V)

	A	B	C	D
1	.250"	.249"	.249"	.250"
2	.246"	.248"	.248"	.250"
3	.254"	.241"	.239"	.245"

AVERAGE(V) = 0.247" (0.627cm)

DATA (T)

	A	B	C	D
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				

DATA (U)

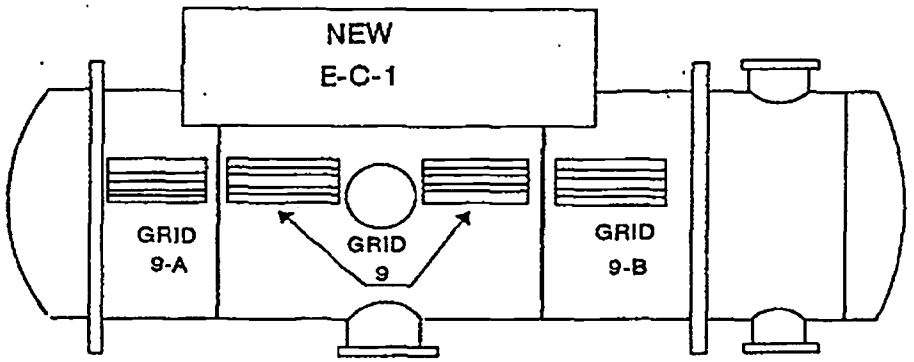
	A	B	C	D
1	.256"	.248"	.246"	.246"
2	.253"	.251"	.250"	.248"
3	.259"	.257"	.256"	.252"
4	.247"	.255"	.254"	.252"
5	.248"	.256"	.253"	.252"
6	.253"	.252"	.251"	.252"
7	.257"	.257"	.251"	.249"
8	.251"	.251"	.252"	.250"
9	.251"	.252"	.253"	.250"
10				
11				

AVERAGE(U) = 0.252" (0.640cm)

DATA (S)

	A	B	C	D
1				
2				
3				

SKETCH



E-C-1 23 APRIL 1998
LOCATION 9A

DATA

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	.511"	.511"	.510"	.513"	.512"	.513"	.512"	.513"	.515"	.511"	.513"	.514"	.518"
2	.510"	.509"	.511"	.513"	.513"	.513"	.516"	.517"	.514"	.511"	.514"	.515"	.516"
3	.514"	.512"	.511"	.514"	.518"	.515"	.520"	.523"	.518"	.514"	.518"	.516"	.519"
4	.510"	.513"	.512"	.513"	.524"	.513"	.517"	.519"	.517"	.515"	.518"	.517"	.517"
5	.512"	.514"	.516"	.516"	.517"	.517"	.518"	.522"	.519"	.516"	.520"	.519"	.521"
6	.511"	.510"	.513"	.515"	.514"	.514"	.514"	.517"	.515"	.514"	.515"	.516"	.519"
7	.511"	.516"	.516"	.515"	.518"	.515"	.516"	.516"	.513"	.514"	.515"	.515"	.518"
8	.513"	.514"	.518"	.516"	.519"	.516"	.515"	.515"	.515"	.518"	.516"	.514"	.518"
9	.513"	.518"	.514"	.514"	.517"	.516"	.515"	.514"	.513"	.516"	.513"	.514"	.518"
10	.513"	.512"	.512"	.515"	.517"	.517"	.515"	.521"	.515"	.515"	.515"	.513"	.518"
11	.511"	.512"	.513"	.514"	.517"	.518"	.521"	.521"	.521"	.518"	.516"	.520"	.522"

AVERAGE $E_{(9A)}$ = 0.515" (1.308 cm)

E-C-1 14 APR 1998

DATA LOCATION 9

	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1						.512"	.512"	.512"	.511"	.511"	.512"	.513"	.512"
2						.520"	.513"	.512"	.515"	.514"	.513"	.513"	.513"
3						.512"	.510"	.512"	.512"	.513"	.512"	.512"	.513"
4						.510"	.509"	.513"	.513"	.519"	.513"	.514"	.516"
5						.512"	.511"	.511"	.513"	.514"	.514"	.513"	.521"
6						.514"	.510"	.512"	.512"	.516"	.512"	.515"	.516"
7						.512"	.508"	.512"	.513"	.511"	.511"	.513"	.517"
8						.510"	.510"	.511"	.510"	.510"	.512"	.512"	.514"
9						.513"	.512"	.511"	.511"	.510"	.510"	.512"	.516"
10						.617"	.513"	.511"	.511"	.510"	.515"	.511"	.515"
11						.508"	.508"	.509"	.510"	.509"	.512"	.511"	.514"

AVERAGE = .512" (1.300 cm)

DATA LOCATION 9

	A1	B1	C1	D1	E1	F1	G1	H1	I1	J1	K1	L1	M1
1	.514"	.515"	.516"	.517"	.519"					.523"	.520"	.519"	.519"
2	.513"	.517"	.516"	.520"	.522					.522"	.521"	.522"	.523"
3	.513"	.515"	.517"	.517"	.520"					.523"	.524"	.519"	.516"
4	.514"	.518"	.520"	.520"	.518"	AREA				.523"	.521"	.519"	.517"
5	.516"	.517"	.519"	.520"	.525"	OF				.520"	.519"	.523"	.517"
6	.518"	.519"	.519"	.520"	.519"	FLANGE				.522"	.520"	.517"	.518"
7	.515"	.516"	.519"	.521"	.522"					.521"	.519"	.517"	.515"
8	.515"	.518"	.519"	.520"	.521"					.512"	.518"	.516"	.515"
9	.521"	.518"	.518"	.517"	.516"					.517"	.510"	.515"	.515"
10	.511"	.513"	.515"	.515"	.515"					.515"	.514"	.516"	.514"
11	.512"	.513"	.516"	.516"	.515"					.515"	.515"	.515"	.513"

AVERAGE = .517" (1.313 cm)

E-C-1 14 APRIL 1998

DATA

LOCATION 9

	N1	O1	P1	Q1	R1	S1	T1	U1	V1	W1	X1	Y1	Z1
1	.520"	.520"	.616"	.516"	.516"	.517"	.518"	.515"	.517"				
2	.517"	.517"	.518"	.515"	.515"	.517"	.514"	.517"	.516"				
3	.516"	.515"	.517"	.515"	.513"	.514"	.507"	.515"	.516"				
4	.517"	.517"	.516"	.517"	.517"	.515"	.518"	.518"	.517"				
5	.518"	.525"	.526"	.519"	.518"	.515"	.514":	.516"	.513"				
6	.519"	.517"	.516"	.512"	.516"	.515"	.515"	.513"	.516"				
7	.515"	.515"	.518"	.513"	.513"	.514"	.514"	.514"	.514"				
8	.515"	.514"	.515"	.511"	.511"	.513"	.513"	.514"	.518"				
9	.513"	.514"	.511"	.517"	.514"	.513"	.513"	.515"	.518"				
10	.513"	.512"	.515"	.513"	.515"	.512"	.513"	.515"	.517"				
11	.513"	.512"	.514"	.514"	.513"	.514"	.513"	.519"	.517"				

NOTE; A LOW READING OF .141" WAS FOUND JUST LEFT OF Q1-1

AVERAGE = 0.516" (1.311 cm)

DATA

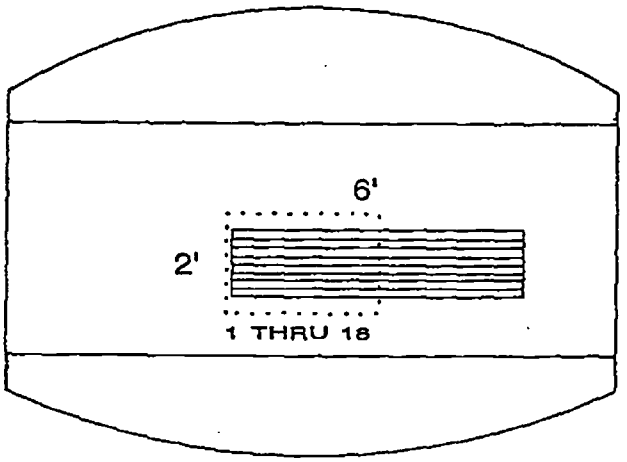
LOCATION 9-B APRIL 23 98

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	.519"	.518"	.515"	.515"	.513"	.511"	.509"	.510"	.510"	.508"	.506"	.512"	.506"
2	.517"	.517"	.514"	.514"	.513"	.512"	.511"	.511"	.510"	.510"	.510"	.508"	.509"
3	.520"	.519"	.517"	.515"	.514"	.513"	.512"	.510"	.511"	.512"	.513"	.509"	.508"
4	.522"	.520"	.517"	.517"	.514"	.512"	.514"	.511"	.511"	.510"	.519"	.515"	.511"
5	.522"	.518"	.514"	.514"	.514"	.510"	.511"	.510"	.510"	.511"	.509"	.509"	.508"
6	.522"	.518"	.515"	.513"	.515"	.512"	.512"	.510"	.517"	.509"	.511"	.508"	.504"
7	.524"	.518"	.516"	.516"	.513"	.515"	.512"	.509"	.511"	.511"	.510"	.507"	.509"
8	.522"	.519"	.515"	.514"	.514"	.512"	.511"	.511"	.508"	.508"	.509"	.507"	.507"
9	.522"	.518"	.515"	.513"	.512"	.514"	.510"	.511"	.513"	.511"	.509"	.516"	.509"
10	.518"	.518"	.515"	.513"	.512"	.512"	.512"	.513"	.517"	.515"	.513"	.509"	.509"
11	.517"	.515"	.515"	.515"	.514"	.514"	.512"	.515"	.521"	.519"	.515"	.511"	.512"

NOTE: A READING OF .133" WAS FOUND JUST LEFT OF J-6

AVERAGE = 0.513" (1.303 cm)

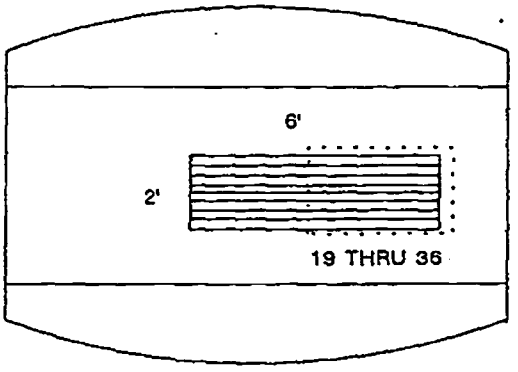
TK-C-100 14 APRIL 1998
LOCATION 11



AVERAGE = 0.326" (0.813cm)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
A	.325"	.325"	.324"	.323"	.324"	.324"	.325"	.324"	.326"	.330"	.327"	.326"	.326"	.328"	.324"	.324"	.323"	.327"
B	.322"	.322"	.322"	.323"	.323"	.322"	.322"	.322"	.325"	.329"	.325"	.325"	.321"	.324"	.322"	.322"	.322"	.326"
C	.321"	.322"	.322"	.320"	.321"	.322"	.323"	.323"	.324"	.324"	.324"	.326"	.324"	.323"	.323"	.321"	.323"	.324"
D	.322"	.320"	.321"	.319"	.319"	.319"	.322"	.320"	.323"	.323"	.322"	.322"	.320"	.322"	.320"	.321"	.320"	.322"
E	.321"	.321"	.322"	.319"	.321"	.320"	.320"	.322"	.322"	.322"	.322"	.323"	.321"	.321"	.321"	.321"	.322"	.322"
F	.321"	.321"	.319"	.318"	.318"	.320"	.320"	.320"	.322"	.321"	.321"	.323"	.328"	.321"	.318"	.320"	.321"	.321"
G	.319"	.322"	.318"	.317"	.318"	.318"	.317"	.319"	.321"	.320"	.322"	.322"	.321"	.321"	.316"	.319"	.318"	.320"
H	.321"	.324"	.322"	.316"	.317"	.319"	.318"	.319"	.319"	.320"	.319"	.319"	.320"	.320"	.318"	.319"	.319"	.320"
I	.319"	.328"	.322"	.315"	.317"	.316"	.316"	.317"	.316"	.319"	.318"	.318"	.316"	.316"	.315"	.317"	.317"	.319"
J	.320"	.316"	.324"	.315"	.315"	.316"	.316"	.318"	.316"	.319"	.318"	.318"	.318"	.315"	.315"	.318"	.320"	.319"
K	.314"	.314"	.316"	.314"	.314"	.314"	.313"	.314"	.316"	.316"	.315"	.316"	.315"	.312"	.312"	.313"	.313"	.316"
L	.313"	.314"	.313"	.314"	.312"	.313"	.313"	.314"	.315"	.316"	.315"	.314"	.313"	.312"	.312"	.313"	.314"	.314"

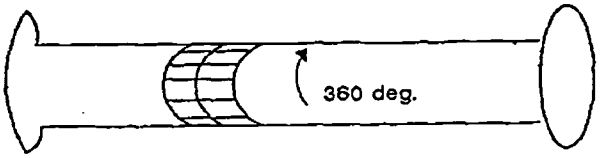
TK-C-109 14 APRIL 1998
LOCATION 11



AVERAGE = .321" (.815 cm)

	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
A	.327"	.327"	.326"	.326"	.329"	.326"	.326"	.327"	.327"	.328"	.327"	.326"	.329"	.329"	.326"	.325"	.325"	.324"
B	.324"	.323"	.323"	.323"	.324"	.324"	.328"	.325"	.326"	.325"	.325"	.326"	.326"	.325"	.325"	.322"	.323"	.327"
C	.326"	.324"	.324"	.323"	.322"	.324"	.326"	.326"	.324"	.324"	.324"	.322"	.324"	.324"	.323"	.322"	.323"	.325"
D	.322"	.323"	.322"	.321"	.333"	.322"	.323"	.324"	.326"	.323"	.323"	.323"	.323"	.322"	.321"	.322"	.321"	.322"
E	.321"	.320"	.320"	.319"	.324"	.322"	.322"	.321"	.322"	.323"	.323"	.324"	.323"	.322"	.322"	.322"	.322"	.322"
F	.321"	.319"	.318"	.319"	.319"	.319	.320"	.322"	.320"	.320"	.324"	.322"	.321"	.321"	.318	.318"	.320"	.319"
G	.321"	.317"	.319"	.317"	.319"	.319"	.320"	.319"	.320"	.322"	.322"	.320"	.323"	.321"	.321"	.318"	.319"	.320"
H	.321"	.319"	.319"	.318"	.319"	.317"	.318"	.318"	.319"	.321"	.321"	.324"	.325"	.319"	.318"	.318"	.317"	.322"
I	.320"	.318"	.318"	.316"	.318"	.317"	.319"	.318"	.320"	.321"	.321"	.324"	.323"	.318"	.318"	.319"	.317"	.318"
J	.318"	.317"	.318"	.316"	.318"	.317"	.320"	.317"	.316"	.320"	.319"	.319"	.318"	.319"	.319"	.318"	.317"	.317"
K	.316"	.315"	.315"	.313"	.315"	.314"	.316"	.317"	.315"	.317"	.319"	.317"	.316"	.316"	.316"	.315"	.314"	.315"
L	.315"	.314"	.313"	.315"	.314"	.313"	.317"	.313"	.314"	.314"	.315"	.315"	.319"	.317"	.315"	.314"	.313"	.314"

E-C-2 14 APRIL 1998
LOCATION 12



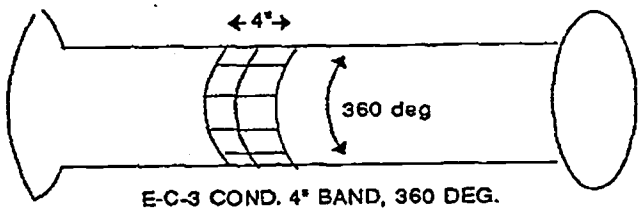
E-C-2 COND. 4" BAND 360 DEG.

	A	B	C
1	.338"	.328"	.331"
2	.332"	.340"	.333"
3	.336"	.336"	.338"
4	.340"	.341"	.340
5	.337"	.347"	.336"
6	.344"	.352"	.340"
7	.334"	.341"	.333"
8	.331"	.327"	.321"
9	.326"	.327"	.315"
10	.330"	.326"	.320"
11	.327"	.328"	.322"
12	.323"	.315"	.319"
13	.323"	.314"	.311"
14	.319"	.314"	.312"
15	.317"	.318"	.314"
16	.328"	.320"	.319"
17	.321"	.320"	.330"
18	.315"	.316"	.313"
19	.322"	.310"	.313"
20	.329"	.313"	.324"
21	.310"	.314"	.323"
22	.315"	.319"	.331"
23	.322"	.329"	.336"
24	.322"	.329"	.335"
25	.323"	.325"	.330"

NOTE:
E-C-2 COVERED W/
THICK PAINT

AVERAGE = $\frac{\phi.326"}{(0.828\text{ cm})}$

E-C-3 14 APRIL 1998
LOCATION 13



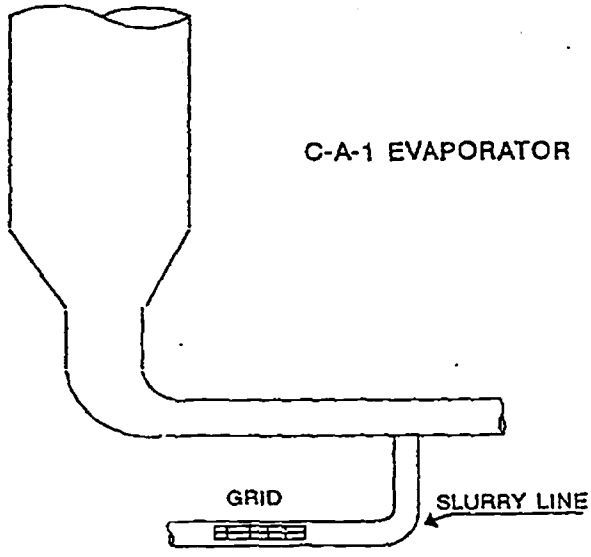
E-C-3 COND. 4" BAND, 360 DEG.

NOTE:
C-C-3 COVERED WITH
THICK PAINT

	A	B	C
1	.341"	.328"	.343"
2	.332"	.330"	.328"
3	.349"	.347"	.349"
4	.341"	.348"	.334"
5	.331"	.332"	.334"
6	.352"	.360"	.352"
7	.348"	.351"	.350"
8	.338"	.340"	.351"
9	.340"	.334"	.350"
10	.336"	.341"	.354"
11	.332"	.337"	.336"
12	.339"	.338"	.336"
13	.333"	.338"	.339"

AVERAGE = $\frac{\phi.341"}{(0.866\ cm)}$

LOCATION 15 14 APRIL 1998
LINE 1-3.5



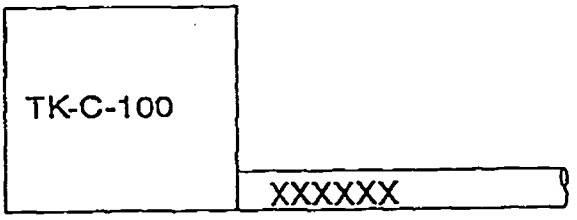
1 READING EVERY 2" 12 PLACES TOTAL

DATA

	A
1	.136"
2	.135"
3	.135"
4	.136"
5	.136"
6	.137"
7	.137"
8	.137"
9	.137"
9	.138"
10	.138"
11	.138"
12	.136"

AVERAGE = $\frac{\emptyset.137"}{(0.348cm)}$

TK-C-100 DRAIN LOCATION 16
14 APRIL 1998

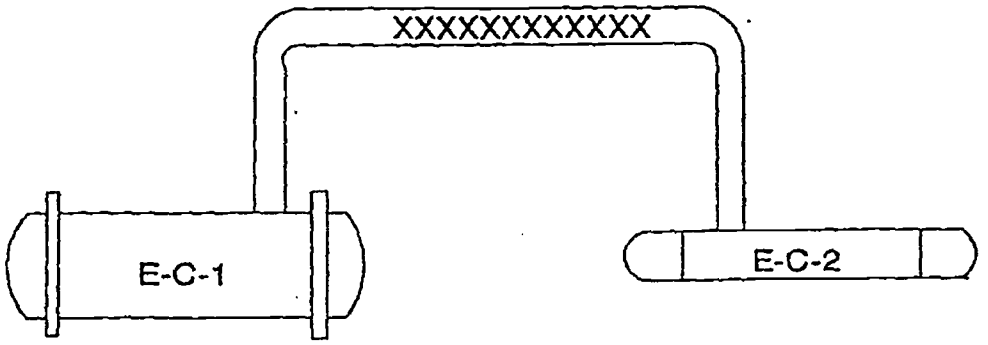


TK-C-100 TO LERF, 12 POINTS ALONG PIPE, 2" SPACE

	DATA
1.	.227"
2.	.223"
3.	.219"
4.	.218"
5.	.218"
6.	.215"
7.	.213"
8.	.211"
9.	.213"
10.	.213"
11.	.216"
12.	.214

AVERAGE = 0.217" (0.551 cm)

LOCATION 17 4/23/98
LINE FROM E-C-1 TO E-C-2



12 INDIVIDUAL READINGS ALONG PIPE, 2" SPACE

	DATA
1.	.309'
2.	.315'
3.	.310'
4.	.311"
5.	.320"
6.	.299"
7.	.318"
8.	.319"
9.	.316"
10.	.313"
11.	.314"
12.	.310"

AVERAGE = ϕ.313" (0.795 cm)

Appendix E (CORROSION STUDY)

FLUOR DANIEL
INTEROFFICE CORRESPONDENCE

To:	Sherm Tifft	Date:	June 16, 1998
Location:	Hanford	Reference:	1998 Interim 242-A Evaporator Tank System Integrity Assessment Plan
From:	Cathy Shargay		
Location:	Irvine	Client:	
Telephone:	(949)975-5137	Subject:	Approval of May 1998 Corrosion Evaluation Report
FAX Number:	(949)975-7178		

I have reviewed the "1998 Interim 242-A Evaporator Tank System Integrity Assessment Plan", the "1998 UT Results (Report)" and the May 18, 1998 "Corrosion Evaluation" report. The effects of radioactivity have not been evaluated as this was addressed during the original design and we were not provided the nesessary data to update this part of the materials analysis.

I certify that I have examined and am, familiar with the information submitted in the "Corrosion Evaluation" report. I believe that the information is true, accurate and complete.

Cathleen A. Shargay
Technical Director, Materials and Welding
Registered Professional Engineer
California State PE Registration # CR001053

9/30/00

(Original signed and sealed)

FLUOR DANIEL
INTEROFFICE CORRESPONDENCE

To:	Sherm Tifft	Date:	May 18, 1998
Location:	Hanford	Reference:	1998 Interim 242-A Evaporator Tank System Integrity Assessment Plan
From:	Ali A. Darwish		
Location:	Irvine	Client:	
Telephone:	(949)975-2929	Subject:	Corrosion Evaluation
FAX Number:	(949)975-7178		
cc:	Cathy Shargay		

A corrosion evaluation based on the 1998 Interim 242-A Evaporator Tank System Integrity Assessment Plan 1998 (IAP) and the 1998 ultrasonic testing (UT) results was performed to examine the compatibility of the materials used and the commodities being handled. The scope of this evaluation is limited to the equipment and piping sections listed in the Thickness and Corrosion Rate Table of this report.

The 1998 UT inspection did not cover all equipment and piping sections that were inspected in 1993. As a result, corrosion rates for locations 1, 2S, 2T, 4, 6, 10, and 14 could not be obtained.

As for the equipment that were inspected, not all grid points were measured. Therefore, for every equipment, an average thickness was calculated for the grid points measured and compared to the average thickness of the 1993 comparable grid points to make the corrosion rate calculations more accurate. For example, the 1993 average thickness (Tavg) for Location 3 is based on the average of readings from A1 to L6 only.

The nominal thickness (Tnom) minus the mill tolerance in the table are based on Table 1 of WHC-SD-WM-ER-124 Rev 1. One exception is that for TK-C-100, a minimum required thickness based on the ASME allowable stress has been calculated and is shown on page 6.9-3 of WHC-SD-WM-DP-019 Rev. 0.

FLUOR DANIEL
INTEROFFICE CORRESPONDENCE

Sherm Tifft
May 18, 1998
Page 2 of 3

Conclusion

Materials of construction as described in Table 2 of WHC-SD-WM-DP-019 Rev. 0 are compatible with the service conditions described in Table 4.2a and Table 4.2b of the 1998 IAP. Wall thicknesses of equipment and piping are above the Tnom minus the mill tolerance which is the minimum thickness expected during original construction. Corrosion rates are also negligible or within acceptable limits (<5 mpy). Hence, all equipment is acceptable for the next five years.

One concern is that Paragraph 4.3 of the 1998 IAP states "... and the portions of concrete structures that may come in contact with the waste are coated with a chemically resistant acrylic coating (Carboline D3358 primer and Carboline D3359 topcoat)". However, Carboline D3358 and D3359 are not recommended for immersion services. It is recommended that several concrete coating/lining manufacturers (Ameron, Stonehard, Plasite, Koch) be consulted for recommendations on the optimum concrete lining for this service.

The UT inspection during the next IAP should include all accessible equipment and grid points that were tested in 1993 so that a more extensive corrosion rates can be evaluated and and a more exhaustive remaining equipment life can be established.

FLUOR DANIEL
INTEROFFICE CORRESPONDENCE

Sherm Tifft
May 18, 1998

Thickness and Corrosion Rate Table

Location	Equipment	Material	Nominal Tnom, in	Tnom - Mill Tolerance , in	1993 Readings Tavg, in	1998 Readings Tavg, in	Corrosion Rate, MPY	1993 Readings Tmin, in	1998 Readings Tmin, in	Minimum Remaining Life (Note 5)
3	C-A-1	SS	0.375	0.32	0.381 (Note 1)	0.384 (Note 1)	0	0.35	0.381	>20
5	Line # 1-1.2	SS	0.25	0.205	0.264 (Note 2)	0.265 (Note 2)	0	0.244	0.252	>20
7	Line # 1-1.4	SS	0.25	0.205	0.25 (Note 3)	0.252 (Note 3)	0	0.223	0.239	>20
9	E-C-1	CS	0.5	0.47	0.522 (Note 4)	0.515 (Note 4)	1.4	0.489	0.507	13.5
11	TK-C-100	SS	0.3125	0.161	0.318	0.32	0	0.309	0.312	>20
12	E-C-2	CS	0.3125	0.273	0.333	0.326	1.4	0.314	0.31	>20
13	E-C-3	CS	0.322	0.262	0.345	0.341	0.8	0.334	0.328	>20
15	Line # 1-3.5	SS	0.134	0.117	0.137	0.137	0	0.135	0.135	>20
16	Line # 4.33	CS	0.216	0.189	0.212	0.217	0	0.208	0.211	>20
17	Line # 2.4	CS	0.28	0.245	0.306	0.313	0	0.3	0.309	>20

Notes:
1. Average for thickness readings from A1 to L6.
2. Average for Section T thickness readings from A1 to D10.
3. Average for Section U thickness readings A1 to D9.
4. Average for thickness readings from A1 to M11.
5. This remaining life is based on the minimum measured thickness (in 1993 or 1998), the average corrosion rate and the Tnom - Mill Tolerance thickness. When this thickness is approached, an actual Tmin based on the design pressure and applicable codes can be determined, which will probably indicate a significantly greater remaining life.

A. Darwish
Ali Darwish

product data sheet

carboline

CARBOLINE® 3358

VOC+

SELECTION DATA

GENERIC TYPE: Single component water-borne acrylic primer.

GENERAL PROPERTIES: A high performance, direct-to-metal acrylic primer which can tolerate a variety of topcoats. Carboline 3358 has exceptional film strength and chemical resistance.

- Low odor
- Excellent flexibility
- Excellent corrosion protection
- Excellent resistance to flash rusting
- Meets the most stringent VOC (Volatile Organic Content) regulations
- Authorized by USDA for Incidental Food Contact

RECOMMENDED USES: As a primer for applications requiring a VOC compliant primer such as railcar, tank exteriors and structural steel. Can be used as a two or three coat all acrylic system with Carboline 3359 topcoat.

NOT RECOMMENDED FOR: Immersion service.

TYPICAL CHEMICAL RESISTANCE
(With appropriate topcoat)

Exposure	Splash & Spillage	Fumes
Acids	Very Good	Excellent
Alkalies	Very Good	Excellent
Solvents	Fair	Good
Salt	Excellent	Excellent
Water	Excellent	Excellent

TEMPERATURE RESISTANCE (Non-immersion)*:
Continuous: 235°F (113°C)
Non-Continuous: 400°F (204°C)

*At 250°F and above, slight discoloration and loss of gloss is observed.

SUBSTRATES: Apply over suitably prepared metal, concrete or other surfaces as recommended.

COMPATIBLE COATINGS: May be applied over most tightly adhering coatings. Normally topcoated with Carboline 3359. Consult Carboline Technical Service for specific recommendations.

SPECIFICATION DATA

THEORETICAL SOLIDS CONTENT:

	By Volume
CARBOLINE 3358	37% ± 2%

June 94 Replaces Nov 91

VOLATILE ORGANIC CONTENT:*

		Calculated EPA Method 24	Per Actual Gallon
As supplied:	lbs/gal	1.43	0.63
	g/l	172	76
Thinned 5% with Potable Water	lbs/gal	1.43	0.66
	g/l	172	66
Thinned 5% with Additive 102	lbs/gal	2.03	0.95
	g/l	243	113
Thinned 10% with Additive 102	lbs/gal	2.53	1.24
	g/l	301	148

*May vary slightly with color.

RECOMMENDED DRY FILM THICKNESS PER COAT:*
2-3 mils (50-75 microns) (Ref: SSPC PA 2)

*Additional thickness may be required over rough surfaces for appearance. Dry film thickness in excess of 3 mils/coat is not recommended.

THEORETICAL COVERAGE PER GALLON:*
579 mil sq. ft. (14.1 sq. m/l at 25 microns)
192 sq. ft. at 3 mils (4.7 sq. m/l at 75 microns)

*Mixing and application losses will vary and must be taken into consideration when estimating job requirements.

STORAGE CONDITIONS: Store indoors.
Temperature: 40-110°F (4-43°C)
Humidity: 0-95%

KEEP FROM FREEZING

SHELF LIFE: 24 months when stored at 75°F (24°C).

COLOR: Salmon 0400 and Buff 0200

GLOSS: Satin

ORDERING INFORMATION

Prices may be obtained from your local Carboline Sales Representative or Carboline Customer Service Department.

APPROXIMATE SHIPPING WEIGHT:

	1's	5's	50 Gal. Drum
CARBOLINE 3358:	11 lbs. (5 kg)	53 lbs. (24 kg)	565 lbs. (257 kg)
Additive # 102	9 lbs. (4 kg)	40 lbs. (18 kg)	N/A
Surface Cleaner #3	N/A	48 lbs. (21.8 kg)	538 lbs. (244.5 kg)

FLASH POINT: (Setaflash)

CARBOLINE 3358:	>200°F	(>93°C)
Additive # 102	146°F	(64°C)
Surface Cleaner #3	>212°F	(>100°C)

To the best of our knowledge the technical data contained herein are true and accurate at the date of issuance and are subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance or injuries resulting from use. Liability, if any, is limited to replacement of products. Prices and cost data, if shown, are subject to change without prior notice. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

APPLICATION INSTRUCTIONS
Carboline® 3358

These instructions are not intended to show product recommendations for specific service. They are issued as an aid in determining correct surface preparation, mixing instructions and application procedure. It is assumed that the proper product recommendations have been made. These instructions should be followed closely to obtain the maximum service from the materials.

SURFACE PREPARATION: Remove all dirt, oil, grease and contaminants in accordance with SSPC-SP1 with clean rags soaked in Thinner #2 or Surface Cleaner #3, followed by a thorough rinse with clean potable water. A mist coat may be required over inorganic zinc primers.

Steel: Abrasive blast according to SSPC-SP6 or Commercial Blast (Note: Section A.6) to obtain a 1-2 mil blast profile is recommended. Power tool or hand tool cleaning in accordance with SSPC-SP3 or SSPC-SP2, to produce a rust-scale free surface is acceptable. New or aged galvanized should be lightly sanded to remove sheen and/or surface deposits.

Concrete: Do not coat concrete treated with hardening solutions unless test patches dictate satisfactory adhesion. Do not apply coating unless concrete has cured at least 28 days at 70°F (21°C) and 50% RH or equivalent time. Can be applied direct to concrete where an uneven surface can be tolerated. Remove laitance by abrasive blasting or other means.

MIXING: Power mix until uniform in consistency. Avoid excessive air entrainment.

THINNING: May be thinned up to 5% by volume with clean, potable water where conditions dictate. Areas with cool substrate and warm ambient conditions can experience a surface skinning and separation. Under these conditions, the use of 5-10% (volume) of Additive #102 assists in the proper film formation at the recommended DFT, without surface skinning. Refer to specification data for VOC information.

Use of thinners other than those supplied or approved by Carboline may adversely affect product performance and void product warranty, whether express or implied.

POTLIFE: This is a single component product which has an indefinite working time. Keep container covered when not in use.

APPLICATION CONDITIONS:

	Material	Surface	Ambient	Humidity
Normal	60-90°F (16-32°C)	65-95°F (18-29°C)	65-90°F (18-32°C)	10-80%
Minimum	50°F(10°C)	50°F(10°C)	50°F(10°C)	0%
Maximum	105°F(40°C)	130°F(54°C)	110°F(43°C)	85%

Do not apply when the surface temperature is less than 5°F, or 3°C above the dew point. Keep dry at 75°F and 50% RH for 90 minutes after application. Water-based products are sensitive to moisture during cure. Do not apply if temperatures are expected to drop below 50°F (10°C) within 24 hours of application.

June 94 Replaces Nov 91

Special thinning and application techniques may be required above or below normal conditions.

ROLLER APPLICATION: Use a short woven nap synthetic roller and apply over smooth wall surfaces and smooth concrete. For rough surfaces, cinder block or very porous surfaces, use a 3/8" woven nap synthetic roller. Multiple coats may be required over rough surfaces.

BRUSH APPLICATION: Use a synthetic bristle brush. Two coats will be required in order to achieve desired film thickness and acceptable hiding characteristics.

SPRAY: Pre-rinse equipment with undiluted Surface Cleaner #3 before spraying. The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

Conventional: Pressure pot equipped with dual regulators, 1/2" I.D. material hose, .086" fluid tip and appropriate air cap.

Airless:

Pump Ratio:*	30:1 (min)
GPM Output:	3.0 (min)
Material Hose:	3/8" I.D. (min)
Tip Size:	.017"-.019"
Output psi:	1800-2200
Filter Size:	60

*For two or more pick-ups, a 45:1 pump ratio is recommended.

For ease of application using airless spray equipment, remove the pick-up tube and immerse the lower unit directly into the material.

*Teflon packings are recommended and are available from the pump manufacturer.

DRYING TIMES: These times are at the recommended dry film thickness (3.0 mils).

Temperature	Dry to Handle and Topcoat
50°F (10°C)	3 hours
75°F (24°C)	2 hours
90°F (32°C)	1 hour

High humidity, high film thickness or cooler temperatures will lengthen Dry to Handle/Topcoat and final cure times due to slower water evaporation rate. Cohesive strength will develop with time.

CLEAN UP: Use clean potable water, followed with suitable solvent to dry equipment.

CAUTION: READ AND FOLLOW ALL CAUTION STATEMENTS ON THIS PRODUCT DATA SHEET AND ON THE MATERIAL SAFETY DATA SHEET FOR THIS PRODUCT.

WATER-BASED PRODUCT. KEEP ABOVE 32°F (0°C). EMPLOY NORMAL WORKMANLIKE SAFETY PRECAUTIONS. USE WITH ADEQUATE VENTILATION AND WEAR GLOVES OR USE PROTECTIVE CREAM ON FACE AND HANDS IF HYPERSENSITIVE. KEEP CONTAINER CLOSED WHEN NOT IN USE. IN CASE OF SPILLAGE ABSORB AND DISPOSE OF IN ACCORDANCE WITH LOCAL APPLICABLE REGULATIONS.

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CARBOLINE® 3359

VOC

SELECTION DATA

GENERIC TYPE: Single component water-borne acrylic topcoat.

GENERAL PROPERTIES: A durable, high performance acrylic topcoat for use where excellent weathering properties and chemical resistance are required. Carboline 3359 can be used over Carboline 3358 for an all acrylic system, or applied over a variety of tightly adhering primers including inorganic zincs.

- Low odor
- Universal topcoat
- Excellent durability
- Excellent weatherability
- Excellent corrosion protection
- Meets the most stringent VOC (Volatile Organic Content) regulations
- Authorized by USDA for Incidental Food Contact
- Available in Rapid Tint colors

RECOMMENDED USES: As a topcoat for a variety of primers where a VOC compliant topcoat is required such as railcars, tank exteriors and structural steel.

NOT RECOMMENDED FOR: Immersion service.

TYPICAL CHEMICAL RESISTANCE:

Exposure	Splash & Spillage	Fumes
Acids	Very Good	Excellent
Alkalies	Very Good	Excellent
Solvents	Fair	Good
Salt	Excellent	Excellent
Water	Excellent	Excellent

TEMPERATURE RESISTANCE (Non-immersion)*:
Continuous: 235°F (113°C)
Non-Continuous: 400°F (204°C)

*At 250°F and above, slight discoloration and loss of gloss is observed.

SUBSTRATES: Apply over suitably prepared metal, concrete or other surfaces as recommended.

COMPATIBLE COATINGS: Can be applied over a variety of primers including inorganic zincs, alkyds, acrylics, epoxies, vinyls and urethanes. Used over Carboline 3358 as a two or three coat system. Consult Carboline Technical Service for specific recommendations.

SPECIFICATION DATA

THEORETICAL SOLIDS CONTENT:

	By Volume
Carboline 3359	36 ± 2%

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VOLATILE ORGANIC CONTENT:

		Calculated EPA Method 24	Per Actual Gallon
As supplied:	lbs/gal	1.15	0.48
	g/l	138	57
Thinned 5% with Potable Water	lbs/gal	1.15	0.47
	g/l	138	56
Thinned 5% with Additive #102	lbs/gal	1.81	0.82
	g/l	217	98
Thinned 10% with Additive #102	lbs/gal	2.34	1.11
	g/l	281	133

*May vary slightly with color.

RECOMMENDED DRY FILM THICKNESS PER COAT*:
2-3 mils (50-75 microns) (Ref: SSPC PA 2)

*Certain colors may require multiple coats for adequate hiding. Additional thickness may be required over rough surfaces for appearance. Dry film thickness in excess of 3 mils/coat is not recommended.

THEORETICAL COVERAGE PER GALLON:*
579 mil sq. ft. (14.1 sq.m/l at 25 microns)
192 sq. ft at 3 mils (4.7 sq.m/l at 75 microns)

*Mixing and application losses will vary and must be taken into consideration when estimating job requirements.

STORAGE CONDITIONS: Store Indoors.
Temperature: 40-110°F (4-43°C)
Humidity: 0-95%

KEEP FROM FREEZING

SHELF LIFE: 24 months when stored at 75°F (24°C)

COLOR: Available in a variety of colors. Contact your local Carboline Sales Representative or Carboline Customer Service Department for availability.

GLOSS: SemiGloss

ORDERING INFORMATION

Prices may be obtained from your local Carboline Sales Representative or Customer Service Representative.

APPROXIMATE SHIPPING WEIGHT:

	1's	5's	50 Gal. Drum
CARBOLINE 3359	11 lbs. (5 kg)	51 lbs. (23 kg)	525 lbs. (239 kg)
Additive #102	9 lbs. (4 kg)	40 lbs. (18 kg)	N/A
Surface Cleaner #3	N/A	48 lbs. (21.8 kg)	538 lbs. (244.5 kg)

FLASH POINT: (Setaflash)

CARBOLINE 3359:	>200°F	(>93°C)
Additive #102	146°F	(64°C)
Surface Cleaner #3	>212°F	(>100°C)

To the best of our knowledge the technical data contained herein are true and accurate at the date of issuance and are subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance or process results from use. Liability, if any, is limited to replacement of products. Prices and data, as shown, are subject to change without prior notice. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

APPLICATION INSTRUCTIONS

Carboline® 3359

These instructions are not intended to cover product recommendations for specific services. They are issued as an aid in determining correct surface preparation, mixing instructions and application procedures. It is assumed that the proper product recommendations have been made. These instructions should be followed closely to obtain the maximum service from the materials.

SURFACE PREPARATION: Apply over clean, dry recommended primer. Remove all dirt, oil, grease and contaminants in accordance with SSPC-SP1 with clean rags soaked in Thinner #2 or Surface Cleaner 3 followed by a thorough rinse with clean, potable water. A mist coat may be required over inorganic zinc primers.

MIXING: Power mix until uniform in consistency. Avoid excessive air entrainment.

THINNING: May be thinned up to 5% by volume with clean, potable water where conditions dictate. Areas with cool substrate and warm ambient conditions can experience a surface skinning and separation. Under these conditions, the use of 5-10% (volume) of Additive #102 assists in the proper film formation at the recommended DFT, without surface skinning. Refer to specification data for VOC information.

Use of thinners other than those supplied or approved by Carboline may adversely affect product performance and void product warranty, whether express or implied.

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APPLICATION CONDITIONS:

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Normal	60-90°F (16-32°C)	65-85°F (18-29°C)	65-90°F (18-32°C)	10-80%
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GPM Output:	3.0 (min)
Material Hose:	3/8" I.D. (min)
Tip Size:	.017"-.019"
Output psi:	1800-2200
Filter Size:	60

*For two or more pick-ups, a 45:1 pump ratio is recommended.

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CAUTION: READ AND FOLLOW ALL CAUTION STATEMENTS ON THIS PRODUCT DATA SHEET AND ON THE MATERIAL SAFETY DATA SHEET FOR THIS PRODUCT.

WATER-BASED PRODUCT. KEEP ABOVE 32°F (0°C). EMPLOY NORMAL WORKMANLIKE SAFETY PRECAUTIONS. USE WITH ADEQUATE VENTILATION AND WEAR GLOVES OR USE PROTECTIVE CREAM ON FACE AND HANDS IF HYPERSENSITIVE. KEEP CONTAINER CLOSED WHEN NOT IN USE. IN CASE OF SPILLAGE, ABSORB AND DISPOSE OF IN ACCORDANCE WITH LOCAL APPLICABLE REGULATIONS.

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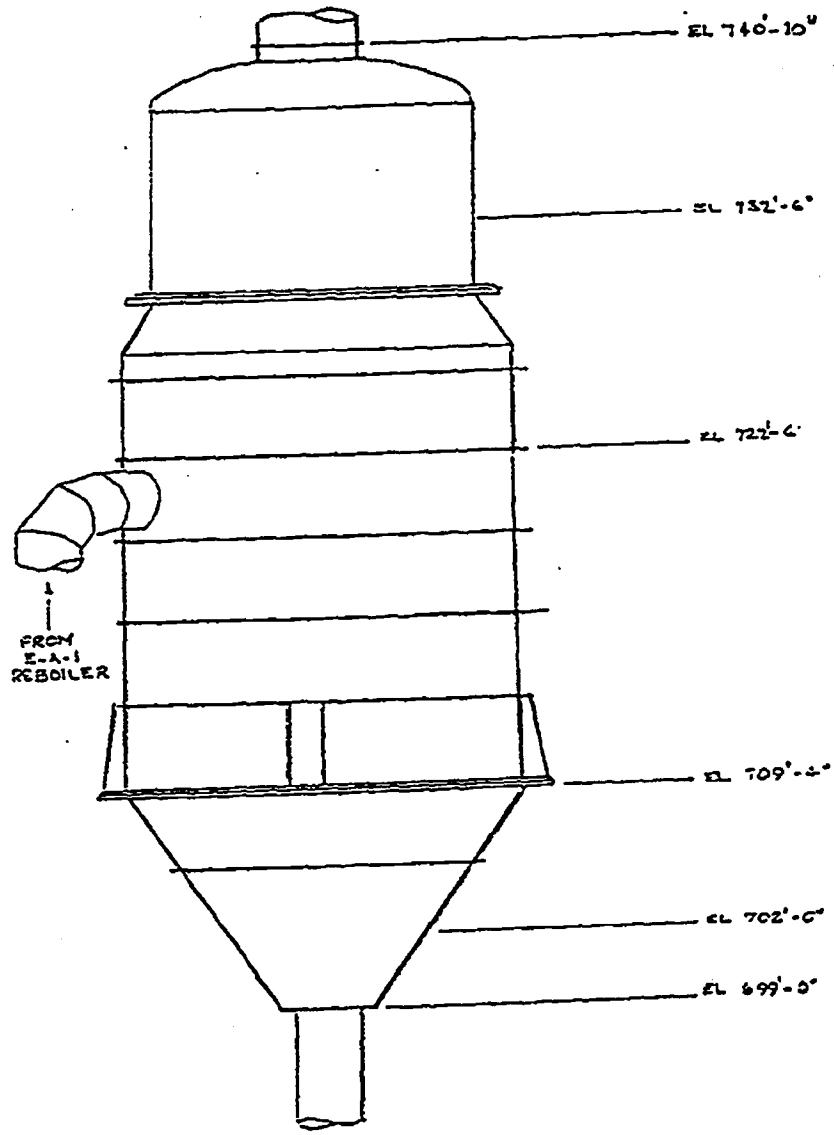
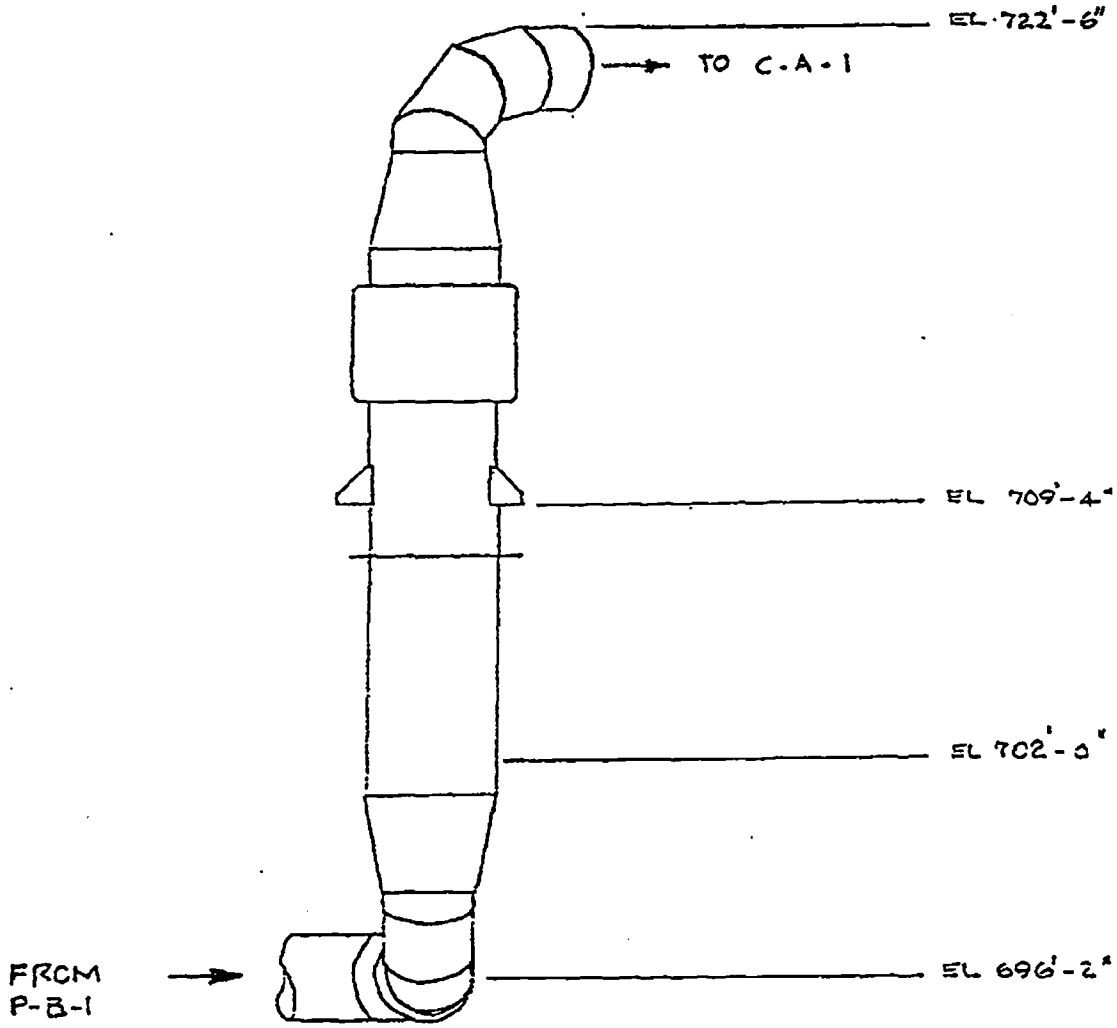
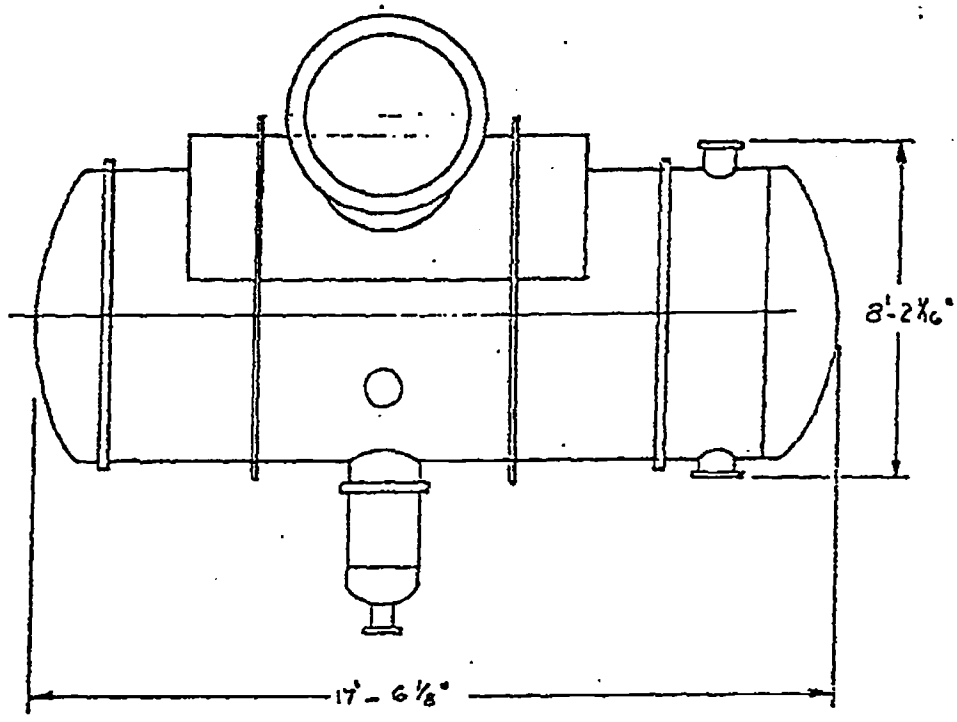
Appendix F (FIGURES)



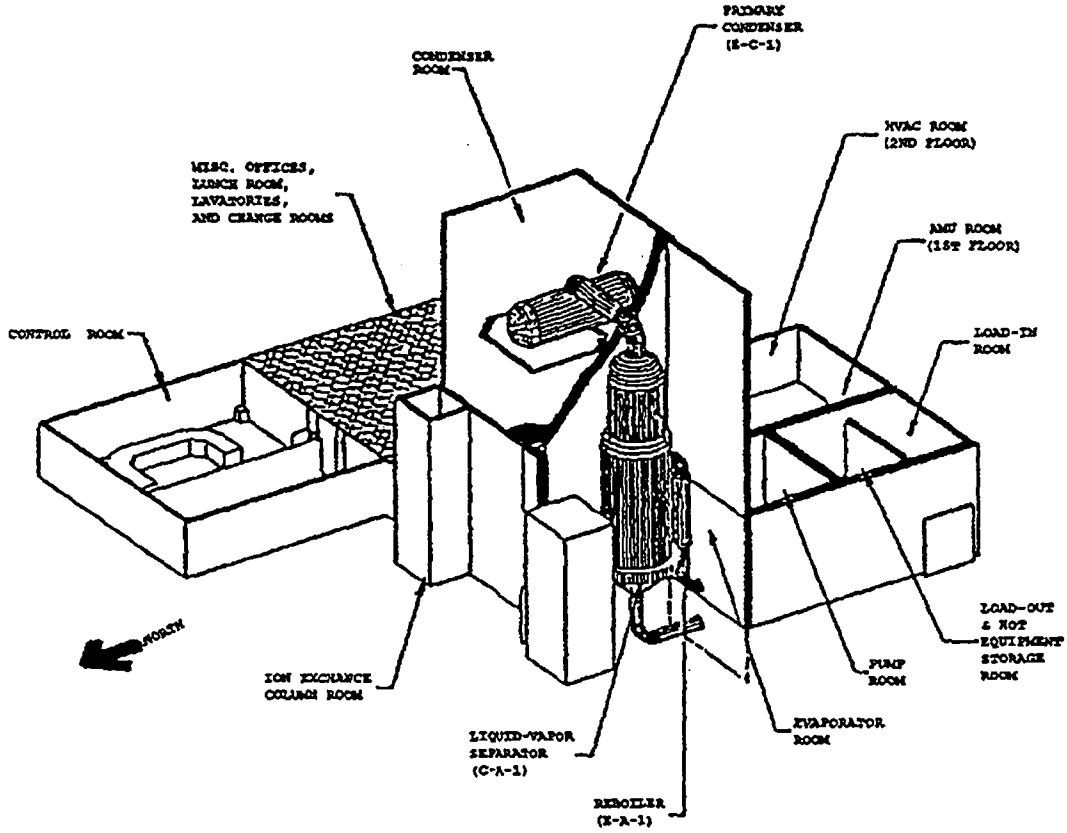
C-A-1 EVAPORATOR CRYSTALLIZER



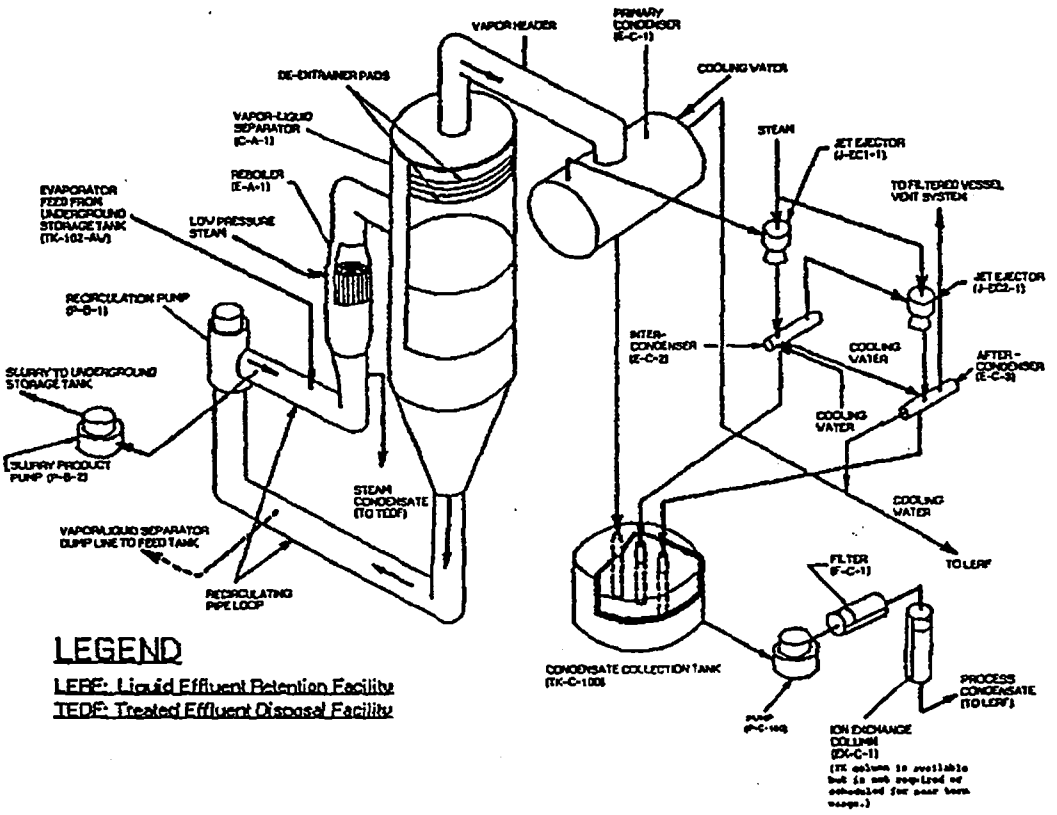
E-A-1 REBOILER



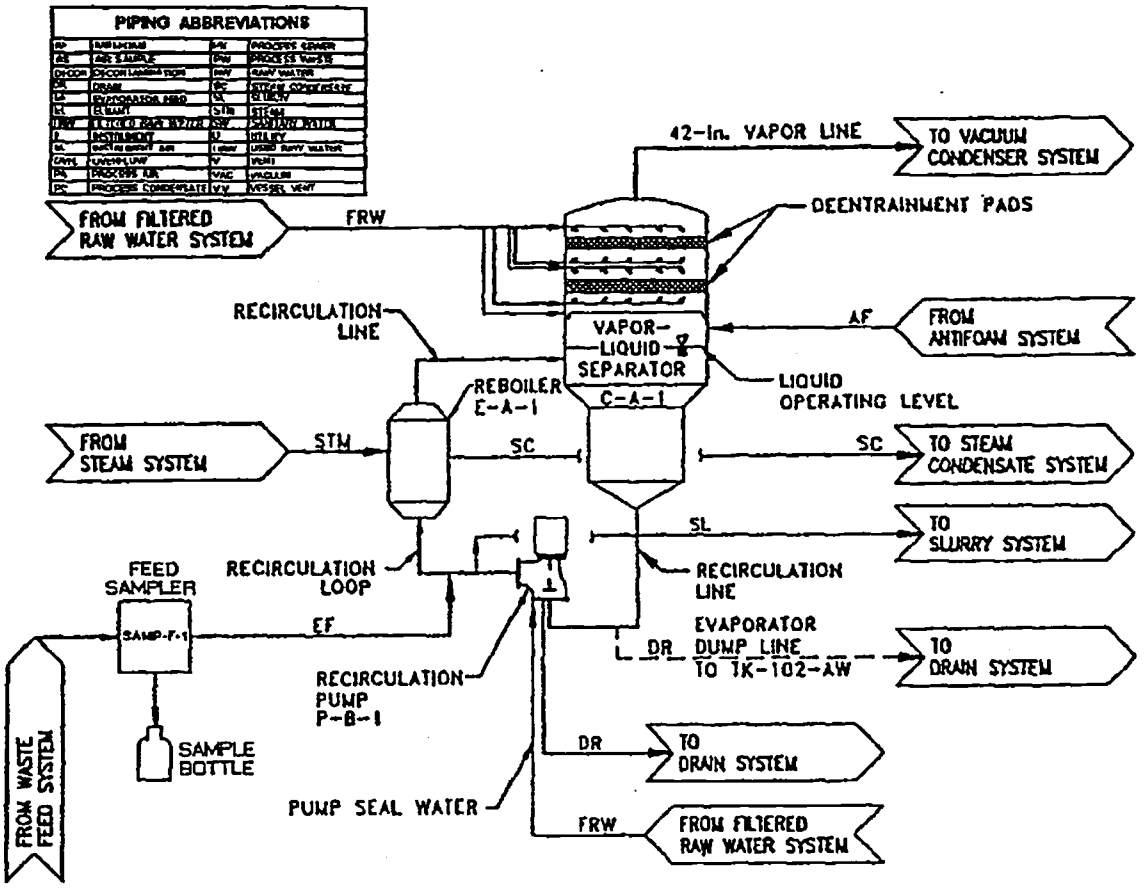
E-C-1 CONDENSER



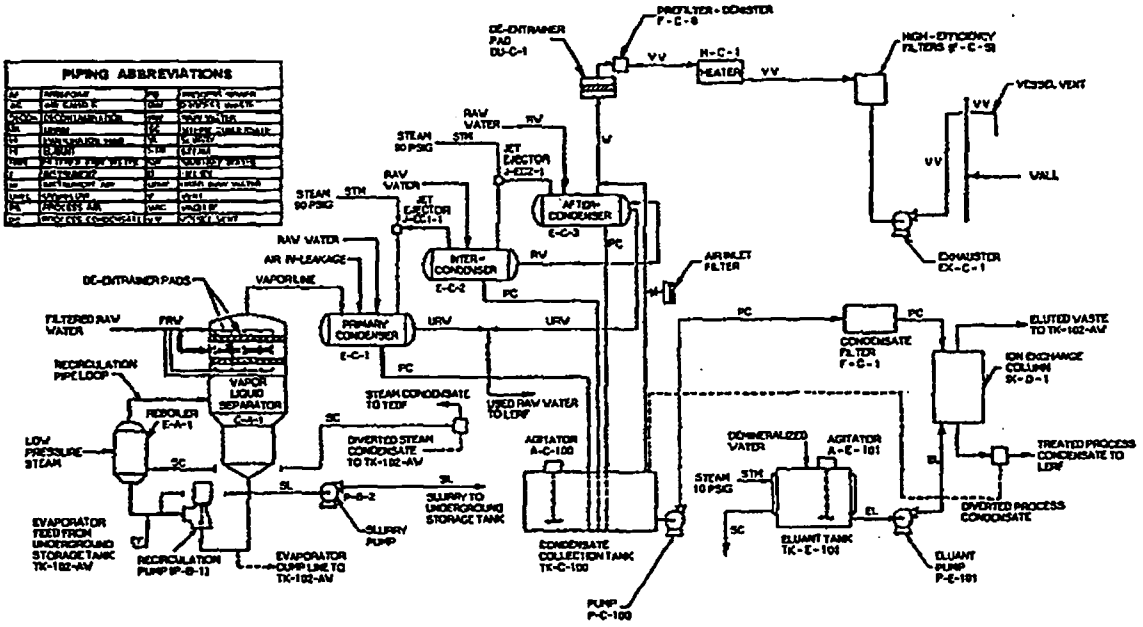
242-A Evaporator Perspective



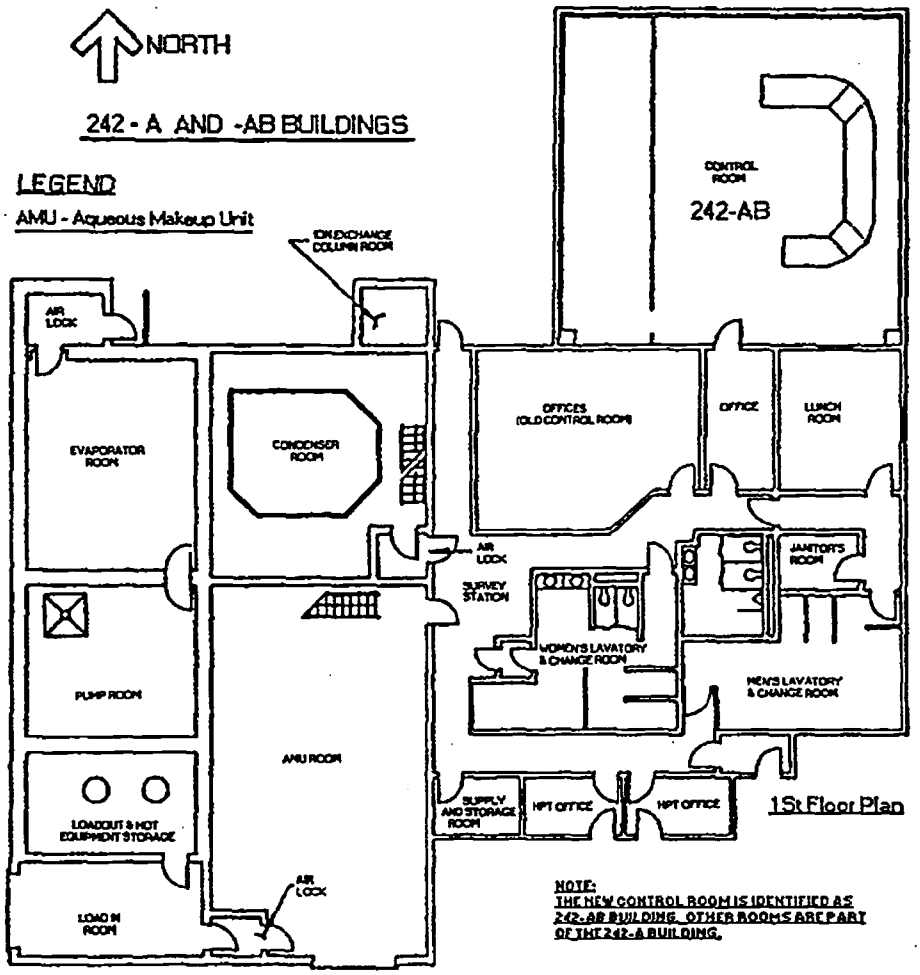
242-A Evaporator Simplified Schematic



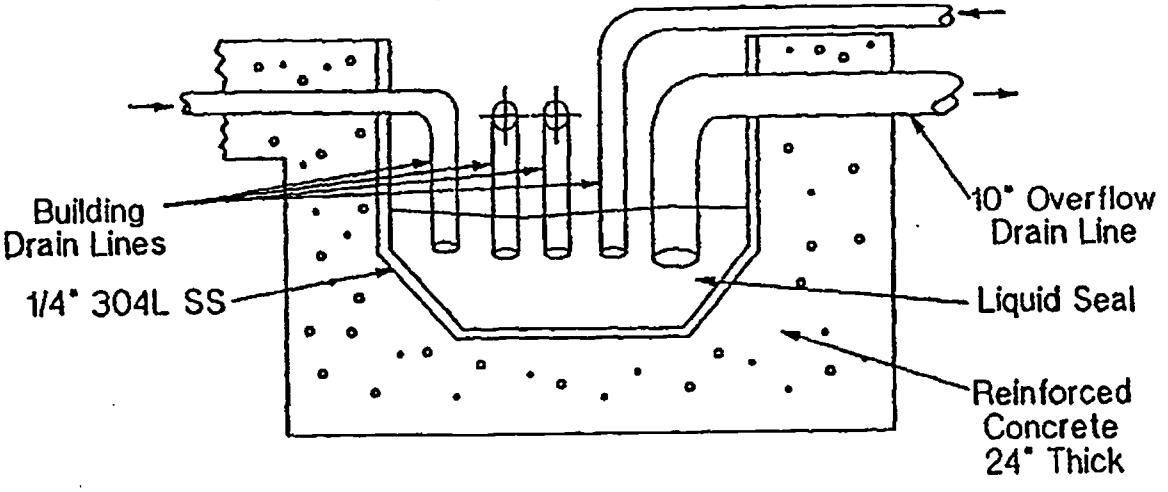
242-A Evaporator Process Loop



242-A Evaporator Simplified Process Flow Diagram



242-A Evaporator First Floor Plan



242-A Pump Room Sump Schematic

Appendix G (DESIGN PARAMETERS)

Table G-1: Operating Parameters

Component	Pressure/Flow	Temperature (F)
C-A-1 Evaporator		
Vapor Section	<0.8 psia	120
Lower Circulation Pipe	16,000 gpm	200
E-A-1 Reboiler		
Tube Side (Waste)	16,000 gpm	
Shell Side (Steam)	29.7 psia	250
E-C-1 Primary Condenser		
Tube Side (Cooling Water)	2,800 gpm	72
Shell Side (Waste Vapor)	0.8 psia	95
E-C-2 Intermediate Condenser		
Tube Side (Cooling Water)	150 gpm	72
Shell Side (Waste Vapor)	1.0 psia	150
E-C-3 Final Condenser		
Tube Side (Cooling Water)	150 gpm	95
Shell Side (Waste Vapor)	14.0 psia	170
TK-C-100 Condensate Catch Tank	14.0 psia	151

Table G-2: Equipment Design Criteria

COMPONENTS	DESIGN CRITERIA		COMMENTS
C-A-1 Evaporator	Standard(s):	ASME Section VIII Div. 1, HPS 230W & 220W	Designed by Struthers Nuclear and Process Co.
	Temperature:	200°F	
	Pressure:	Full Vacuum	
	Materials:	ASTM SA 240 304L (Shell)	
	Reference:	Construction Spec. B-100-P1, SD-WM-TI-003	
E-A-1 Reboiler	Standard(s):	ASME Section VIII Div. 1, HPS 230W & 220W	ASTM SA 312 304 (NOZZLES)
	Temperature:	350°F (Shell), 250°F (Tubes)	
	Pressure:	100 psig (Shell), Full Vacuum (Tubes)	
	Materials:	ASTM SA 240 304L (Shell)	
	Reference:	Construction Spec. B-100-P1, SD-WM-TI-003	
P-B-1 Recirculation Pump	Standard(s):	Not Specified	New Installation per Project B-534
	Temperature:	200°F	
	Pressure:	Not Specified	
	Materials:	ASTM A296 Gr CF-8 and GrGF-8	
	Reference:	Procurement Spec. B-534-P4	
	Capacity:	14,000 GPM	

COMPONENTS	DESIGN CRITERIA		COMMENTS
P-B-2 Bottoms Pump	Standard(s):	Not Specified	New Installation per Project B-534
	Temperature:	Not Specified	
	Pressure:	Not Specified	
	Materials:	Stainless Steel	
	Reference:	Procurement Spec. B-534-P11	
E-C-1 Primary Condenser	Standard(s):	ASME Section VIII Div. 1, HPS 220W	SA 515 GR70 (Tube Sheets). Original unit is being replaced by unused spare on Project B-534.
	Temperature:	150°F(Shell and Tubes)	
	Pressure:	Full Vacuum (Shell), 100 psig (Tubes)	
	Materials:	SA285 GrC (Shell Heads, Internal Supports)	
	Reference:	Construction Spec. B-100-P1	
E-C-2 Intermediate Condenser	Standard(s):	ASME Section VIII Div. 1, TEMAC	
	Temperature:	350°F(Shell and Tube)	
	Pressure:	100 psig to Full Vacuum (Shell), 100 psig (Tube)	
	Materials:	Carbon Steel	
	Reference:	Shutte and Koerting Co. Spec. Sheet 72-T-018-J-1	

COMPONENTS	DESIGN CRITERIA		COMMENTS
E-C-3 Final Condenser	Standard(s):	ASME Section VIII Div. 1, TEMAC	
	Temperature:	350°F	
	Pressure:	100 psig to Full Vacuum (Shell), 100 psig (Tube)	
	Materials:	Carbon Steel	
	Reference:	Shutte and Koerting Co. Spec. Sheet 72-T-018-J-1	
TK-C-100 Condensate Catch Tank	Standard(s):	ASME Section VIII Div. 1 & HWS 4311, Rev. 2	Modified in 1977 per ASME Sec. VIII Div. 2 New material ASTM A312 Type 304. 1124 Gallon capacity.
	Temperature:	Not Available	
	Pressure:	5 psig	
	Materials:	347 SS	
	Reference:	H-2-69357 & H-2-40704	
IX-D-1 Ion Exchange Column	Standard(s):	ASME Section VIII Div. 1	Fabricated in 1977. Corrosion allowance 1/16 inch. Mesh Screens 304 or 316 SS
	Temperature:	150°F	
	Pressure:	120 psig	
	Materials:	Carbon Steel (ASTM A36 & A285 GrC)	
	Reference:	H-2-69359	

COMPONENTS	DESIGN CRITERIA		COMMENTS
TK-C-103 Condensate Measurement Tank	Standard(s):	ASME Section VIII Div. 1	500 Gallon tank
	Temperature:	Not Available	
	Pressure:	Atmospheric	
	Materials:	ASTM A36 (Wier Plate ASTM A240 304L)	
	Reference:	H-2-69370	
Seal Pot, Liquid Seal	Standard(s):	ASME Section VIII Div. 1	27 Gallon tank
	Temperature:	Not Available	
	Pressure:	Atmospheric	
	Materials:	ASTM A36 CS	
	Reference:	H-2-69368	
Building/Structure	Standard(s):	UBC, 1972	Seismic Design Loads: Horizontal, 0.25g DBE/0.125g OBE, Vertical, 2/3 horizontal. Coated with phenoline 305 chemically resistant coating.
	Temperature:	N/A	
	Pressure:	N/A	
	Materials:	Poured in-place concrete	
	Reference:	Structural Dwgs. H-2-69276 thru 85 and H-2-69269 thru 75 and H-2-90739 thru 41	

Table G-3: Pipe Materials
(PER VITRO SPEC B-100-C1)

SYSTEM DESIGNATOR	MATERIAL
M1	ASTM A53, TYPE E OR S, GR A OR B, OR ASTM A106, GR A OR B
M2	ASTM A53, TYPE E OR S, GR A OR B, OR ASTM A106, GR A OR B
M5	ASTM A53, TYPE E OR S, GR A OR B, OR ASTM A106, GR A OR B
M7	ASTM A53, TYPE E OR S, GR A OR B, OR ASTM A106, GR A OR B
M8	ASTM A312, TP304L
M9	$\leq$12": ASTM A312, GRTP304L, $\geq$14": ASTM A240, GRTP304L
M21	SS 304L, PER HPS-124-M
M24	ASTM A53, TYPE S, GR B, OR ASTM A106, GR B
M25	ASTM A53, TYPE S, GR B, OR ASTM A106, GR B
M27	SS ASTM A312, TYPE 304L
M31 (TUBING)	.035" WALL THK, ASTM A269, GR TP304
M32 (TUBING)	POLYETHYLENE, SINGLE LINE OR BUNDLED & SHEATHED IN PVC
M33 (TUBING)	COPPER ASTM B68
M42	ASTM A53, TYPE E OR S, GR A OR B, OR ASTM A106, GR A OR B
(REFER TO SPEC. FOR VARIOUS SCHEDULES)	

Table G-4: 242-A Evaporator Bulk Chemistry Solutions

Description	Units	Evaporator Feed	Double Shell Slurry Feed	Process Condensate	Cooling Water	Steam Condensate
pH	--	13.0	13.0	10.0	6.2	8.0
TOC	mg/L	3.3 E+03	4.6 E+03	2.6 E+02	1.7 E+00	1.1 E+00
TDS	mg/L	0.0 E+00	0.0 E+00	3.4 E-01	0.0 E+00	7.6 E+01
Alpha	uCi/ML	0.0 E+00	2.9 E+11	5.7 E-11	8.1 E-10	6.5 E-10
Beta	uCi/ML	0.0 E+00	3.5 E-10	6.8 E-13	1.0 E-08	00 E+00
AlO_2^-	mg/L	2.2 E+04	3.2 E+04	4.1 E+01	00 E+00	00 E+00
NH_4^+	mg/L	9.3 E-02	1.3 E+02	2.3 E+03	00 E+00	6.3 E-02
Barium	mg/L	9.8 E+00	1.4 E+01	3.0 E-02	3.0 E-02	3.1 E-02
Baron	mg/L	1.2 E+01	1.7 E+01	3.5 E-02	0.0 E+00	1.8 E-02
Calcium	mg/L	5.1 E+01	7.3 E+01	1.9 E+01	1.9 E+01	1.9 E+01
Cadmium	mg/L	1.1 E+01	1.6 E+01	3.1 E-02	2.0 E-03	0.0 E+00
$CO_3^=$	mg/L	8.7 E+03	1.2 E+04	2.4 E+01	0.0 E+00	0.0 E+00
Cl-	mg/L	4.5 E+03	6.4 E+03	2.4 E+01	7.8 E-01	1.1 E+00
Chromium	mg/L	4.2 E+02	6.0 E+02	3.4 E-02	1.0 E-02	0.0 E+00
Copper	mg/L	4.8 E+00	6.9 E+00	1.5 E-02	7.3 E-02	1.1 E-02
CN^-	mg/L	3.4 E+01	4.8 E+01	9.5 E-02	0.0 E+00	0.0 E+00
F^-	mg/L	2.7 E+02	3.9 E+02	4.3 E-02	0.0 E+00	1.3 E-01
Iron	mg/L	2.8 E+01	3.9 E+01	8.5 E-02	1.0 E-01	8.4 E-02
H_2	mg/L	1.6 E-11	1.7 E-11	2.0 E-11	0.0 E+00	0.0 E+00
OH^-	mg/L	4.9 E+04	7.0 E+04	1.4 E+02	0.0 E+00	0.0 E+00
Lead	mg/L	5.1 E+01	7.0 E+01	4.6 E+00	1.3 E-02	5.5 E-05
Magnesium	mg/L	2.0 E+01	2.9 E+01	4.6 E-01	4.3 E+00	4.5 E+00
Manganese	mg/L	2.0 E+01	2.9 E+01	5.8 E-02	1.1 E-02	1.4 E-02
Mercury	mg/L	5.6 E+00	8.0 E+00	1.6 E-02	0.0 E+00	1.1 E-04
Molybdenum	mg/L	4.2 E+01	6.0 E+01	1.2 E-01	0.0 E+00	0.0 E+00
Nickel	mg/L	2.8 E+01	4.0 E+01	7.9 E-02	1.1 E-02	0.0 E+00
NO_3^-	mg/L	1.2 E+05	1.8 E+05	6.1 E+01	1.2 E+00	5.5 E-01
NO_2^-	mg/L	6.0 E+04	8.6 E+04	7.0 E+01	0.0 E+00	0.0 E+00
PO_4	mg/L	3.7 E+03	5.3 E+03	1.0 E+01	0.0 E+00	0.0 E+00
Phosphorus	mg/L	3.4 E+03	4.9 E+03	9.6 E+00	0.0 E+00	0.0 E+00
Potassium	mg/L	1.3 E+04	1.8 E+04	1.0 E+01	8.0 E-01	7.5 E-01
Silicon	mg/L	1.3 E+02	1.9 E+02	5.9 E-01	0.0 E+00	2.5 E+00
Sodium	mg/L	1.7 E+05	2.4 E+05	1.6 E+01	2.3 E+01	2.2 E+00
SO_4^-	mg/L	2.0 E+03	2.9 E+03	5.0 E+00	1.0 E+01	1.0 E+01
Tungsten	mg/L	1.5 E+02	2.1 E+02	4.1 E-01	0.0 E+00	0.0 E+00
Uranium	mg/L	5.3 E+01	7.5 E+01	1.5 E-01	6.4 E-04	5.2 E-04
Zinc	mg/L	3.4 E+01	4.8 E+01	9.6 E-02	4.8 E-02	1.9 E-02

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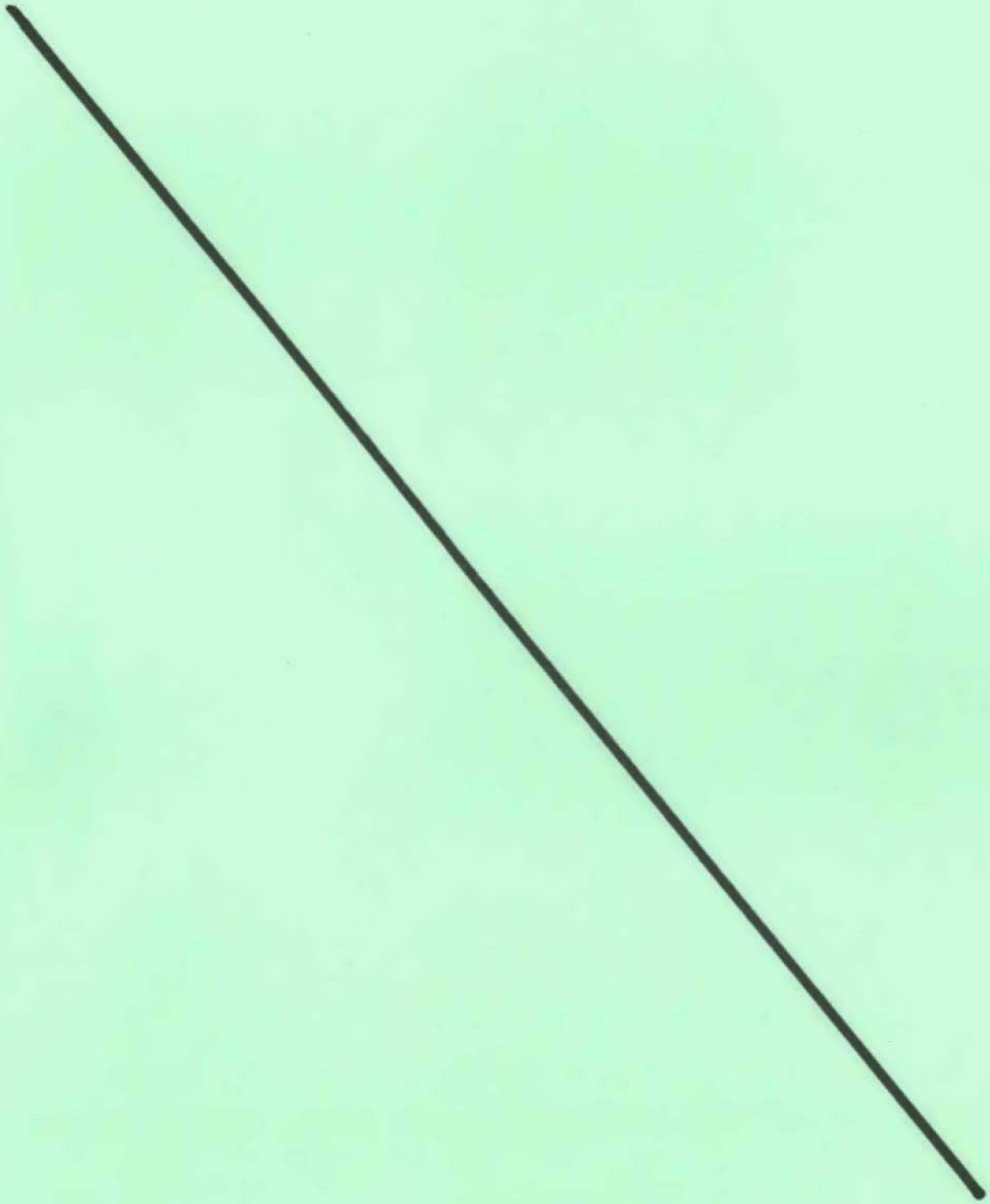

CHAPTER 6.0
PROCEDURES TO PREVENT HAZARDS

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CHAPTER 6.0
PROCEDURES TO PREVENT HAZARDS

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6.0 PROCEDURES TO PREVENT HAZARDS

This chapter discusses security, inspection schedules, preparedness and prevention requirements, preventive procedures, structures, and equipment, and prevention of reaction of ignitable, reactive, and incompatible waste for the 242-A Evaporator.

6.1 Security

Refer to Permit Attachment 3, Security for compliance with WAC 173-303-310(2)(b) and (c). The 242-A Evaporator is located within the 200 Area of the Hanford Facility and access is controlled by physical barriers, which complies with WAC 173-303-310(2)(c). To meet the requirements of WAC 173-303-310(2)(a), signs stating *Danger-Unauthorized Personnel Keep Out*, or equivalent language, legible at 25 feet or more, are posted at each entrance to the active portion or each entrance that will lead to the active portion. The Permittees will post signs on or near the outside doors to the 242-A Evaporator.

6.1.1 Waiver

A waiver of security procedures and equipment requirements is not requested for the 242-A Evaporator. Therefore, the waiver requirements outlined in WAC 173-303-310(1)(a) and (b) are not applicable.

6.2 Inspection Plan

This section describes the method and schedule for inspections of the 242-A Evaporator. The purpose of inspections is to identify situations that might cause or lead to a release of mixed waste that could pose a threat to human health and the environment. Abnormal conditions identified by an inspection must be corrected on a schedule that prevents hazards to the public and environment.

6.2.1 General Inspection Requirements

This section provides an overview of inspections performed at the 242-A Evaporator. A copy of the inspection plan is kept in the Hanford Facility Operating Record, 242-A Evaporator unit-specific portion. There are three general classes of inspections at the 242-A Evaporator:

- Monitoring of remote instrumentations and alarms are performed by operating personnel in the 242-A Evaporator control room using the MCS computer.
- Visual inspections of tanks and equipment are performed by operating personnel. Other inspections of 242-A Evaporator equipment are performed as noted in Table 6.1 through Table 6.4.
- Preventive maintenance of equipment and calibration of instruments are performed by maintenance personnel. A computerized tracking system is used to identify and schedule preventive maintenance and calibration activities.

Preventive maintenance and instrument calibrations on certain equipment might not be possible when the 242-A Evaporator is operating. Because of the limited duration of 242-A Evaporator campaigns, these activities are scheduled during outages between campaigns to avoid interference with operating activities. Per Condition II.O.3 inspection of high radiation areas will be addressed on a case-by-case basis.

6.2.1.1 Types of Problems

The 242-A Evaporator inspections include, but are not limited to, the following:

- Condition of tanks and ancillary equipment.
- Condition of secondary containment.
- Evidence of leaks or overflows from tanks, piping, or transfer lines.
- Condition of security equipment.
- Condition of safety, communications, and emergency equipment.

A schedule of inspections, including items to be inspected, problems to look for, frequency of inspections and responsible organization are provided in Tables 6.1 through 6.4.

6.2.1.2 Frequency of Inspections

The frequency of inspections is based on the significance of a failure of the equipment and on regulatory requirements, Hanford Site and industry standards, and experience of the nature and frequency of equipment failures.

- The frequency of inspections for the 242-A Evaporator is given in Tables 6.1 through 6.4. Examples of frequencies include:
  - Daily (at least every 24 hours) - visual inspections of tanks, piping and secondary containment.
  - Weekly (at least every 7 days) - visual inspections of personal protective equipment, exterior lighting, and posted warning signs.
  - Monthly (at least every 31 days) - inspections of emergency sirens, fire extinguishers, safety showers, emergency lighting and the spill control kit.
  - Annually (at least every 365 days) - instrumentation calibrations, cathodic protection system testing, fire inspections.

Leak detectors are functionally checked within 92 days of the start of a campaign and every 92 days thereafter until the campaign is over. The frequency of some alarm monitoring is continuous. This means an operator must be present in the control room to monitor alarm instruments that continuously check for conditions such as leaks and high sump levels. Continuous monitoring is only required when the 242-A Evaporator is processing waste

6.2.2 Tank System Inspections and Corrective Actions

This section discusses the inspections performed on the two tank systems at the 242-A Evaporator: the vapor liquid separator (C-A-1), and the condensate collection tank (TK-C-100). Inspections include secondary containment and leak and overfill prevention equipment.

6.2.2.1 Overfill Prevention

The vapor liquid separator (C-A-1), is equipped with instrumentation that alarms before the tank reaches a level where the tank could overflow or entrain liquid waste into the vacuum condenser system. The alarm annunciates in the control room allowing operating personnel to take immediate action to stop the vapor liquid separator from overfilling.

The condensate collection tank (TK-C-100), was designed with an overflow line that routes waste to the feed tank, 241-AW-102. This design prevents tank overflow to the condenser room.

6.2.2.2 Visual Inspections

Visual inspections of tanks and secondary containments are performed to check for leaks, signs of corrosion or damage, and malfunctioning equipment. The following rooms containing dangerous waste are inspected:

- Condenser room
- Pump room
- Loadout and hot equipment storage room

In addition, the AMU and Loading Room are inspected when dangerous waste is present in the room.

The vapor liquid separator (C-A-I) is located in the evaporator room, with a portion of the recirculation loop located in the pump room. Because of the high radiation dose in the evaporator room, visual inspections cannot be performed. Leaks in the evaporator room drain to the pump room sump; monitoring of the pump room sump instrumentation is performed to determine if leaks have occurred.

Visual inspection of the pump room and the loadout and hot equipment storage room is performed through the shielding windows in the AMU to constrain personnel radiological exposure to levels that are as low as reasonably achievable (ALARA).

6.2.2.3 Leak Detectors

The sample enclosures in the load out and hot equipment storage room have leak detectors for both the feed and slurry samplers. For information on these systems and their secondary containment, refer to Chapter 4.0.

During sampling or maintenance activities associated with the evaporator room, pump room, or loadout and hot equipment storage room, a radiological contamination control curtain may be extended over the load out room to reduce the likelihood of contaminants reaching the environment through the load out door. When extended, the contamination control curtain will limit visibility to the load out and hot equipment storage room from the shielding window on the AMU mezzanine while completing inspections. When this is the case, inspection forms will denote that the containment curtain was extended. Leaks in the evaporator room, pump room, and the loadout and hot equipment storage room drain to the pump room sump. The sump high-level alarm serves as a leak detector for these rooms. For information on the rooms and their drain systems, refer to Chapter 4.0.

The PC-5000 transfer line may be continuously monitored during transfers by an electronic leak detection system (Chapter 4.0) or visually inspected at the encasement catch tank (TK-PC-101) in the Liquid Effluent Retention Facility (LERF) catch basin (242AL-43). The leak detection system alarms are monitored in the 242-A Evaporator Control Room on the Monitoring and Control System (Chapter 4.0). When necessary, visual inspections of the PC-5000 transfer line encasement are administratively controlled by the 242-A Evaporator Shift Manager and occur at a minimum once every 24 hours during waste water transfers through the PC-5000 transfer line to ensure compliance with WAC 173-303-640(4)(c)(iii). Visual inspection for leaks from the PC-5000 transfer line are performed by 242-A Evaporator Operations, by looking for signs of any liquid not attributed to rain/precipitation at the encasement catch tank (TK-PC-101). If any liquid is observed the 242-A Evaporator Shift Manager is notified to take corrective actions.

6.2.2.4 Alternative Leak Detection during Electrical/Ventilation Outages

As part of maintenance or system upgrades, the need to secure electrical power or ventilation to the 242-A Evaporator sometimes becomes necessary. This includes activities such as, but not limited to: cleaning and inspection of the motor control centers (MCCs) for distributing electrical power to the systems at the 242-A Evaporator, ventilation system maintenance and upgrades. Planned electrical or ventilation outages are performed during periods when Double Shell Tank System waste is not being processed.

During times when access is limited as a result of electrical or ventilation outages, performance of daily inspections specified in Table 6.1 may be impacted. When impacted, an alternative method of leak detection is implemented for the condenser room, and the inspections are suspended in the pump room, loadout and hot equipment storage room, and the loading room.

When impacted in the condenser room, a camera will be placed above the floor drain to detect the presence of leaks or spills. The process condensate collection tank (TK-C-100), located in the condenser room, is the only tank storing dangerous waste on a routine basis. It is not normal to allow personnel access into the condenser room during extended electrical or ventilation outages unless maintenance activities or upgrades require entry. If required, the camera and subsequent television monitor will be provided electrical power via an alternative source. Operators will complete their daily observations for leaks or spills using this method for the condenser room. Facility personnel will document the use of this alternative method in the Hanford Facility Operating Record, 242-A Evaporator unit specific portion.

For the pump room, loadout and hot equipment storage room, and the loading room, these rooms do not have the capability for a camera so that inspections are suspended during maintenance activities affecting the electrical power supply to the overhead lighting.

Performance of Table 6.1 daily inspections is not possible. Storage of mixed waste does not occur in these rooms because systems which manage mixed waste within the pump room and the loadout and hot equipment storage room are flushed and gravity drained to the extent possible after each campaign. Should any remaining liquid leak from primary containment; it is captured by the secondary containment system and routed to the pump room sump and ultimately to the 241-AW-102 DST System tank. Quantities of liquid sufficient to reach 241-AW-102 would cause a change in tank level. Facility personnel will document when inspections cannot be performed due to electrical outages in the Hanford Facility Operating Record, 242-A Evaporator unit specific portion.

The process described in the preceding paragraphs of this section may also be implemented when external events cause electrical or ventilation outages.

6.2.2.5 Cathodic Protection

Cathodic protection is not required for the equipment within the 242-A facility boundaries. The only portion of the system, which is underground, is the PC-5000 transfer line. The PC-5000 line is constructed of fiberglass.

6.2.2.6 Tank Assessments

The IARs were issued in 1998 and 2008. The frequency and nature of these assessments are discussed in Chapter 4.0.

6.2.3 Storage of Reactive and Ignitable Wastes

A Fire Protection Engineer (FPE) performs the annual ignitable and reactive waste inspection of the 242-A Evaporator. The inspection record includes the date and time of the inspection, the name of the professional inspector, a notation of the observations made, and any remedial actions which were taken as a result of the inspection. The completed inspection record is included in the Hanford Facility Operating Record, 242-A Evaporator unit-specific portion.

6.2.4 Air Emissions Control and Detection Inspections

The process vent at the 242-A Evaporator is subject to 40 CFR 264, Subpart AA, which requires organic emissions be limited to 1.4 kilograms per hour (3.1 pounds per hour), and 2.8 mega grams per year (6,173 pounds per year), or controls be installed to reduce organic emissions by 95 percent. Organic concentrations in the waste processed at the 242-A Evaporator are limited to ensure the values of 1.4 kilograms per hour (3.1 pounds per hour) and 2.8 mega grams per year (6,173 pounds per year) are not exceeded. Therefore, no emission control devices are installed on the 242-A Evaporator vessel ventilation system and no inspections are required (Chapter 4.0).

6.2.5 Inspection Logs

Visual inspections (refer to Tables 6.1-6.4) are performed using inspection log sheets (also called round sheets) that outline frequency, the components to inspect, operating conditions and ranges, and types of problems. Log sheets are kept in the 242-A Evaporator control room. Inspectors record the following information:

- Date and time of the visual inspection.
- Printed name and signature of the person performing the inspection.
- Notations of the observations made, including space for writing comments.
- An account of spills or discharges in accordance with WAC 173-303-145.

Completed log sheets are reviewed and approved by the shift supervisor, collected, and stored for at least 5 years.

Maintenance inspections are performed as part of the maintenance job control system. After completion, the maintenance documentation is reviewed and signed.

6.2.6 Schedule for Remedial Action for Problems Revealed

If while performing a visual inspection (Table 6.1), a leak or spill is discovered, 242-A Evaporator management responds immediately per Chapter 7.0, Contingency Plan. Action is taken to stop the leak and determine the cause. The waste is removed from the secondary containment within 24 hours or in a timely manner that prevents harm to human health and the environment. The specific actions for the pump room sump are described in Chapter 4.0.

If an alarm activates during inspections, an operator responds immediately and implements appropriate actions.

If an inspection identifies equipment that is missing, damaged, or not operating properly, the operator records the problem on a deficiency log in the 242-A Evaporator control room. Repair work is prioritized by 242-A Evaporator management to mitigate health and environmental risks.

6.3 Preparedness and Prevention Requirements

The following sections document the preparedness and prevention measures taken at the 242-A Evaporator.

6.3.1 Equipment Requirements

The following sections describe the internal and external communications and emergency equipment located at the 242-A Evaporator that can be activated by the 242-A Evaporator Building Emergency Director (BED). Hanford Facility-wide equipment is identified in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02).

6.3.2 Internal Communications

The 242-A Evaporator is equipped with internal communication systems to provide immediate emergency instruction to personnel. The onsite communication systems at the 242-A Evaporator include telephones, hand-held two-way radios, a public address system, and alarm systems. The telephone and radio systems provide for internal and external communication. Alarm systems allow personnel to appropriately respond to various emergencies, including building evacuations, take cover events, fires and/or explosions. The locations of telephones, public address systems, and alarms are given in the Chapter 7.0, Contingency Plan.

Immediate emergency instruction to personnel is provided by a public address system using speaker horns and speakers located throughout the 242-A and 242-AB Buildings and outside.

6.3.2.1 External Communications

The 242-A Evaporator is equipped with devices for summoning emergency assistance from the Hanford Fire Department, the Hazardous Materials Response Team, and/or Hanford Patrol, as necessary. External communication to summon emergency assistance is made by using a telephone communication system, fire alarm pull boxes, or hand-held radio as described in Permit Attachment 4, *Hanford Emergency Management Plan*, (DOE/RL-94-02). These devices are provided throughout the 242-A Evaporator.

During certain periods, only one operator may be available within the 200 East plateau. This operator has access to external communication using telephones located throughout the building.

6.3.2.2 Emergency Equipment

Emergency equipment is available throughout the 242-A Building. The locations of emergency equipment are provided in Chapter 7.0, Contingency Plan.

Major fire damage is unlikely at the 242-A Evaporator because of the concrete construction and because the amount of combustible material is minimized. Temperature activated water sprinkler systems, emergency lights, fire alarms pull boxes, and fire extinguishers are located throughout the 242-A Evaporator. The 242-A Evaporator relies primarily on the Hanford Fire Department to respond to fires and other emergencies as described in Permit Attachment 4, *Hanford Emergency Management Plan*, (DOE/RL-94-02). The Hanford Fire Department is capable of providing rapid response to fires within the 200 East Area.

Safety showers are used to decontaminate personnel. Water for these devices is supplied from the sanitary water system.

Respirators are located in the Personal Protective Equipment (PPE) storage room near the entryway to the condenser room. Other PPE, such as hazardous material protective gear and special work procedure clothing, are located in cabinets in the survey area. If required, PPE is donned before entry into the rooms containing mixed waste. The level of personal protective equipment required depends on the level of contamination in the area being entered and the activity being performed.

Spill kits are used to provide spill control measures. An inventory of the equipment in the spill kit is included inside the cabinet. The spill kit seal is checked monthly to ensure the spill kit has not been used. If used, the spill kit will be replenished by the next monthly inspection and a new seal applied. If items are unavailable, then this will be noted on the inspection sheet and the kit will be left unsealed until inventory items are replenished.

The 242-A Evaporator operating personnel are trained in the use of emergency equipment (Chapter 8.0).

6.3.2.3 Water for Fire Control

Water for fire protection is supplied from the 200 East Area raw water system. The water distribution system is sized to provide adequate volume and pressure to supply fire fighting needs under normal and emergency conditions. A fire hydrant is located in the immediate proximity of the 242-A Building.

In the event that the sprinkler system at the 242-A Evaporator does not put out a fire, or the sprinkler system is damaged during an accident, the Hanford Fire Department fire station will provide equipment as described in Permit Attachment 4, *Hanford Emergency Management Plan (DOE/RL-94-02)*.

6.3.3 Spacing Requirement

Sufficient space is maintained on the exterior of the 242-A Evaporator to allow access of personnel and equipment responding to fires, spills, or other emergencies. Unobstructed fire lanes run from Fourth Street and Canton Avenue to the 242-A Building main entrance to allow emergency vehicle access to the main entrance and the nearby fire hydrant.

The 242-A Evaporator interior space is designed to allow access by emergency response personnel while maintaining barriers to contain releases of gaseous or liquid waste and hazardous substances as defined in WAC 173-303-040. Exit (egress) paths in the rooms containing dangerous waste are checked daily to ensure the walkways have not been obstructed.

6.4 Preventive Procedures, Structures, and Equipment

The following sections describe preventive procedures, structures, and equipment.

6.4.1 Loading and Unloading Operations

Loading and unloading operations, as described in WAC 173-303-395(4), do not take place at the 242-A Evaporator. Liquid mixed waste is transferred only by pipeline.

6.4.2 Runoff

Liquid waste handling at the 242-A Evaporator occurs within tank systems with secondary containment. Rooms containing mixed waste have drains that route to either the pump room sump or the feed tank, 241-AW-102. The pump room sump overflows to the feed tank as well.

Therefore, run-off from a major leak, such as a break in a large water line within the 242-A Building, would be contained within the 242-A Evaporator or drained to the feed tank (refer to Chapter 4.0 for information on secondary containment and drain systems).

6.4.3 Water Supplies

Raw and sanitary water are supplied to the 242-A Evaporator via separate underground lines. Raw water is filtered to prevent organisms and other debris from clogging valves, fire hydrants, and other equipment. Sanitary water is filtered and treated before distribution through a piping system separate from the raw water system.

The raw water supply to the 242-A Evaporator enters the 242-A-81 Water Service Building, passing through a strainer and backflow preventer before entering the facility. The backflow preventer ensures contaminated water cannot flow back into the raw water system. A second backflow preventer is installed in the 242-A Evaporator on the raw water supply line connecting with the condensate recycle line. This system allows either raw water or process condensate to be used for the pump seal water and deentrainment pad spray water without risk of contamination of the raw water system.

The sanitary water system provides water to the lunchroom, drinking fountains, men's and women's change rooms, safety showers, and supply ventilation system air washers. There are no connections between sanitary water and any system or piping containing mixed waste.

6.4.4 Equipment and Power Failures

Backup power is provided by a diesel generator. The diesel motor starts automatically on loss of electrical power and has sufficient fuel to operate the generator, if needed, to safely shut down the evaporator process. An uninterruptible power supply system also is provided to allow continued operation of the MCS computer to ensure uninterrupted monitoring until the backup generator is fully on line.

The 242-A Evaporator is designed to mitigate the effects of failure of a major piece of equipment. In general, the evaporator process can be shut down and the vapor liquid separator gravity drained to the feed tank, 241-AW-102, in the event of equipment failure. The process condensate collection tank (TK-C-100), is designed to overflow to feed tank 241-AW-102. This mitigates failure of the process condensate pump used to transfer the process condensate to LERF.

Response to loss of utilities is discussed in more detail in Chapter 7.0, Contingency Plan.

6.4.5 Personnel Exposure

Design, administrative controls, and personal protective equipment are used at the 242-A Evaporator to prevent undue exposure of personnel to mixed waste.

The following features were incorporated into the 242-A Evaporator design to minimize personnel exposure.

- The 242-A Evaporator is designed for remote operation of equipment containing highly radioactive solutions such as waste feed and slurry. These solutions usually are present only in the pump room and evaporator room, which are heavily shielded and routinely are not entered by operating personnel.
- The 242-A Building ventilation system is designed to provide air flow from uncontaminated zones to progressively more contaminated zones.
- Emergency lighting devices are located strategically throughout the 242-A Evaporator.

- Eyewash stations and safety showers are located as identified in Chapter 7.0, Contingency Plan.
- Methods for decontaminating vessels and equipment are available to reduce personnel exposure if entry for maintenance activity is required.
- Offices, control room, change rooms, and lunchroom are situated to minimize casual exposure of personnel.

All operations are conducted so employee exposure to mixed waste are maintained as low as reasonably achievable (ALARA). Exposures are minimized by engineering or administrative controls with protective gear used where such controls are not practical. Before the start of any operation that might expose personnel to the risk of injury or contamination, a review of the operation is performed to ensure the nature of hazards that might be encountered are considered and that appropriate protective gear is selected. Administrative procedures dictate the level of protective clothing worn and depend on the location within the 242-A Evaporator and the nature of the activity being performed.

6.5 Prevention of Reaction of Ignitable, Reactive, and Incompatible Waste

The following sections describe prevention of reaction of ignitable, reactive, and incompatible waste.

6.5.1 Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Waste

Administrative processes are designed to prevent the ignition or reaction of waste at the 242-A Evaporator. The precautions include the following.

- Analysis is performed on candidate waste in the DST System to check that there are no exothermic reactions when the waste is heated and that there will be no adverse effects due to mixing the contents of different waste tanks in the feed tank and evaporator vessel (refer to Chapter 3.0, for details on waste analysis).
- Sample analysis of the candidate feed tank waste in the DST System includes a surface sample to identify the presence of a separable organic layer that might be ignitable. Refer to Chapter 3.0 for addressing a separable organic layer. The condensate collection tank (TK-C-100), is equipped with instrumentation to detect the presence of a separable organic phase. If a separate organic phase is detected, the tank is allowed to overflow, transferring the organic phase to the feed tank, 241-AW-102.
- The condensate collection tank (TK-C-100) is overflowed to the DST System during each campaign to prevent the possibility of accumulating immiscible organics in the condensate waste tank.
- The vapor liquid separator and the condensate tank are drained and flushed before any welding is performed.

6.5.2 Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste

Waste received at the 242-A Evaporator is protected from materials or conditions that might cause the waste to ignite or react. Much of the waste handling is done remotely to reduce the risk to operating personnel. For precautions taken to prevent the ignition or reaction of waste, refer to Section 6.5.1.

The constituents in the waste received at the 242-A Evaporator that are ignitable or reactive are not very volatile. Therefore, the evaporation process renders the waste that is evaporated (i.e., the process condensate) neither ignitable nor reactive.

1 **Table 6.1. Visual Inspection Schedule for Tanks, Piping, and Rooms**

Item	Inspection	Frequency[1]
Tank and Piping Inspection		
Condensate tank and piping	• Inspect piping for leaks or corrosion	Daily
Room Inspections		
AMU Mezzanine	• Inspect piping for leaks or corrosion • Inspect floor for spills or damage • Inspect for equipment malfunctions • Inspect for housekeeping	Daily[2]
Pump room	• Inspect piping for leaks or corrosion • Inspect floor for spills or damage • Inspect for equipment malfunctions • Inspect for housekeeping • Monitor pump room sump for overflow	Daily[3]
Loadout and hot equipment storage room	• Inspect piping for leaks or corrosion • Monitor pump room sump and inspect floor for spills or damage • Inspect for housekeeping	Daily[3]
Loading room	• Inspect for housekeeping • Monitor drains	Daily[2 3,4]
Condenser room	• Inspect tanks and piping for leaks or corrosion • Inspect floors for spills or damage • Inspect for equipment malfunctions • Inspect for housekeeping	Daily
IX column [5] room	• Inspect piping for leaks or corrosion • Inspect floor for spills or damage	Daily[6]

2

[1] Continuously: an operator must be present in the control room to respond to alarms when processing waste
Daily: at least every 24 hours
2 When dangerous waste is present
3 Use viewing window in AMU Mezzanine to perform inspections except for the pump room which uses the ground floor window
[4] Denote use of contamination control curtain when extended
[5] IX column was removed in 2003. The remaining piping has been drained and isolated.
[6] Surveillance is only required if the piping is returned to service and dangerous waste is reintroduced to the piping

1 **Table 6.2. Inspection Schedule of Safety, Security, and Emergency Equipment**

Item	Inspection	Frequency[1]
Security		
Building external doors	Verify external doors are closed and locked[2]	Daily
Posted warning signs	Verify signs are present, legible, and visible at 25 feet (7.6 meters)	Weekly
Communications		
Radios	Verify radios are operable and batteries are charged	Monthly
Telephones	Verify telephones are operable	Quarterly
Intercom/public address system	Verify systems are working properly	Quarterly
Emergency Equipment		
Safety showers/ eyewash station	Verify operability	Monthly
Emergency lighting	Verify operability	Monthly
Fire extinguishers	Verify fire extinguishers are in their proper location	Monthly
Spill kit	Verify the spill kit is present and that the seal is intact.	Monthly
Personal protective clothing	Verify availability	Weekly
Respirators	Verify availability and shelf life	Monthly

2

[1] Continuously: an operator must be present in the control room to respond to alarms
Daily: at least every 24 hours
Weekly: at least every 7 days
Monthly: at least every 31 days
Quarterly: at least every 124 days
Annually: at least every 365 days

[2] Entrances to office areas are allowed to be unlocked

1 **Table 6.3. Inspection Schedule for Alarm Monitoring**

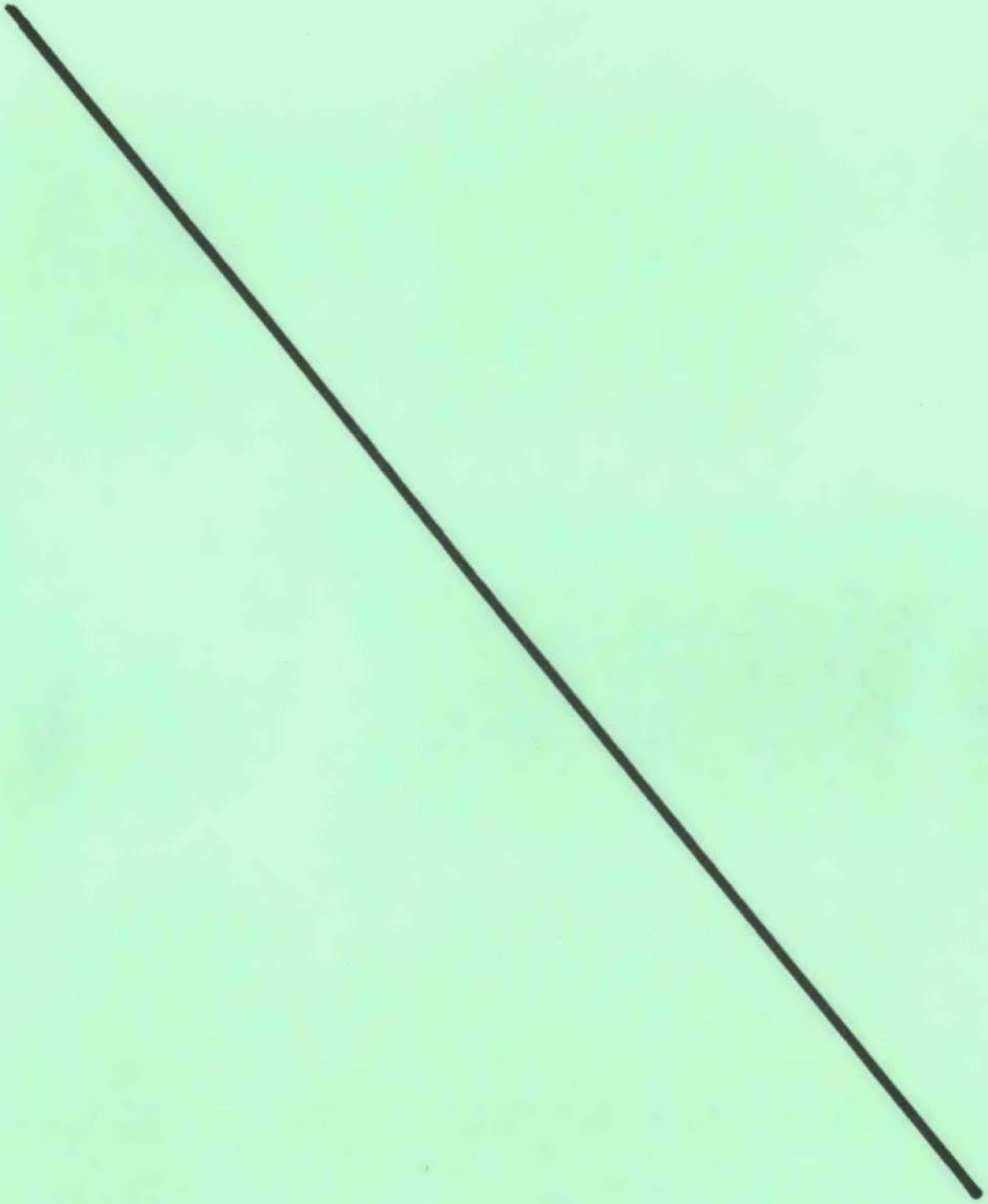
Item	Inspection	Frequency[1]
Overfill Protection		
Vapor liquid separator: WFSH-CA11 WFSH-CA12	Monitor for vapor liquid separator high level. Surveillance required only when solution is in the vapor liquid separator.	Continuously
Leak Detection		
Sampler lines: LDS-SMPL1 LDS-SMPL2	Monitor feed and slurry sampler lines for leaks. Surveillance required only during feed or slurry sampling.	Continuously
Pump room sump: WFI-SUMP1	Monitor for leaks in the evaporator room, pump room, load out and hot equipment storage room and loading room. These rooms drain to the pump room sump. Surveillance required only when waste solution is present in the rooms listed.	Continuously

[1] Continuously: an operator must be present in the control room to respond to alarms.

Table 6.4. Inspection Schedule for Maintenance and Other Inspections

Item	Inspection	Frequency[1]
Instrumentation Functional Checks and Calibrations		
Leak detectors	Perform leak detector functional checks.	Within 92 days of campaign startup and every 92 days thereafter until the campaign is over
Vapor liquid separator high level alarms: WFSH-CA11 WFSH-CA12	Perform calibrations of loop instruments.	Annually
Pump room sump level: WFI-SUMP1	Perform calibrations of loop instruments.	Annually
Backup Electrical Equipment		
Diesel generator	Verify operability.	Monthly
Uninterruptible power supply	Verify output voltage and inspect battery for signs of damage or tampering.	Annually
Fire Systems		
Fire suppressant and notification systems (i.e., sprinkler system and fire alarm pull boxes)	Water flow alarm tests of the sprinkler system to ensure the operation of a single sprinkler head will transmit an alarm, and that any of the manual fire alarm boxes will properly transmit an alarm signal.	Annually
Visual inspection of the physical condition of the sprinkler system, testing, and calibration of smoke detectors, and testing of heat detectors	A visual inspection of the sprinkler system to ensure system integrity as well as the required testing and calibration of detectors to ensure functionality. A flow test at the sprinkler system is performed to ensure proper flow to the system riser.	Biennial
Annual ignitable and reactive waste inspection	Inspect areas where ignitable or reactive wastes are permitted to be stored per WAC 173-303-395(1)(d).	Annually

[1] Continuously: an operator must be present in the control room to respond to alarms.
Monthly: at least every 31 days
Annually: at least every 365 days
Biennial every 730 days



CHAPTER 7.0
CONTINGENCY PLAN

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CHAPTER 7.0
CONTINGENCY PLAN

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7.0 CONTINGENCY PLAN

The applicable WAC 173-303 requirements for a contingency plan at 242-A Evaporator are satisfied in the following documents: portions of the Hanford Facility RCRA Permit (Permit) Attachment 4 *Hanford Emergency Management Plan* (DOE/RL-94-02) and this Chapter.

The unit-specific building emergency plan also serves to satisfy a broad range of other requirements [e.g., Occupational Safety and Health Administration standards (29 CFR 1910), *Toxic Substances Control Act of 1976* (40 CFR 761), and U.S. Department of Energy Orders]. Therefore, revisions made to portions of this unit-specific building emergency plan that are not governed by the requirements of WAC 173-303 will not be considered as a modification subject to WAC 173-303-830 or Permit Condition I.C.3.

Table 7.1 identifies the sections of the unit-specific building emergency plan written to meet WAC 173-303-350(3) contingency plan requirements identified in this Chapter. In addition, Section 12.0 of the unit-specific 242-A Evaporator building emergency plan is written to meet WAC 173-303 requirements identifying where copies of the *Hanford Emergency Management Plan* (DOE/RL-94-02) and the building emergency plan are located and maintained on the Hanford Facility. Therefore, revisions to Section 12.0 of the building emergency plan and the portions identified in Table 7.1 are considered a modification subject to WAC 173-303-830 or Permit Condition I.C.3.

Table 7.1 Hanford Facility Documents Containing Contingency Plan Requirements of WAC 173-303-350(3)

Requirement	Permit Attachment 4 Hanford Emergency Management Plan (DOE/RL-94-02)	Building Emergency Plan[1] (RPP-27867)	Chapter 7.0
-350(3)(a) - A description of the actions which facility personnel must take to comply with this section and WAC 173-303-360	X[2] Section 1.3.4	X[2] Sections 7.1, 7.2 through 7.2.5, and 7.3 Sections 4.0, 8.2, 8.3, 8.4, and 11.0	X[2] Sections 7.3.1, 7.3.2, through 7.3.2.5, and 7.3.3 Sections 7.3, 7.3.4, 7.3.5, 7.3.6, and 7.5
-350(3)(b) - A description of the actions which shall be taken in the event that a dangerous waste shipment, which is damaged or otherwise presents a hazard to the public health and the environment, arrives at the facility, and is not acceptable to the owner or operator, but cannot be transported pursuant to the requirements of WAC 173-303-370(6), Manifest system, reasons for not accepting dangerous waste shipments	X[2] Section 1.3.4	X[2, 3] Section 7.2.5.1	X[2, 3] Section 7.3.2.5.1
-350(3)(c) - A description of the arrangements agreed to by local police departments, fire departments, hospitals, contractors, and state and local emergency response teams to coordinate emergency services as required in WAC 173-303-340(4).	X Sections 3.2.3, 3.3.1, 3.3.2, 3.4, 3.4.1.1, 3.4.1.2, 3.4.1.3, 3.7, and Table 3.1		

Requirement	Permit Attachment 4 Hanford Emergency Management Plan (DOE/RL-94-02)	Building Emergency Plan[1] (RPP-27867)	Chapter 7.0
-350 (3)(d)- A current list of names, addresses, and phone numbers (office and home) of all persons qualified to act as the emergency coordinator required under WAC 173-303-360(1). Where more than one person is listed, one must be named as primary emergency coordinator, and others must be listed in the order in which they will assume responsibility as alternates. For new facilities only, this list may be provided to the department at the time of facility certification (as required by WAC 173-303-810 (14)(a)(I)), rather than as part of the permit application.		X[1] Sections 3.1 and 13.0	X[4] Sections 7.2 and 7.7
-350(3)(e) - A list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems, and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities.		X Section 9.0	X Section 7.4
-350(3)(f) - An evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe the signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes.	X[5] Figure 7.3 and Table 5.1	X[6] Section 1.5	X[6] Section 7.1

An 'X' indicates requirement applies.

[1] Portions of Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) not enforceable through Appendix A of that document are not made enforceable by reference in the building emergency plan.

[2] Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) contains descriptions of actions relating to the Hanford Site Emergency Preparedness System. No additional descriptions of actions are required at the site level. If other credible scenarios exist or if emergency procedures at the unit are different, the description of actions contained in the building emergency plan will be used during an event by a building emergency director.

[3] This requirement only applies to TSD units that receive shipment of dangerous or mixed waste defined as offsite shipments in accordance with WAC 173-303.

[4] Emergency Coordinator names and home telephone numbers are maintained separate from any contingency plan document on file in accordance with Permit Condition II.A.4 and are updated, at a minimum, monthly.

[5] The Hanford Facility (site wide) signals are provided in this document. No unit/building signal information is required unless unique devices are used at the unit/building.

[6] An evacuation route for the TSD unit must be provided. Evacuation routes for occupied buildings surrounding the TSD unit are provided through information boards posted within buildings.

7.1 Building Evacuation Routing (Building Layout)

Figures 7.1 and 7.2 provide identification of the primary and secondary staging areas and a general layout of the 242-A Evaporator. Alternate evacuation routes will be used on a case-by-case basis, based on meteorological conditions at the time of the event.

7.2 Building Emergency Director (BED)

Emergency response will be directed by the BED, as the Emergency Coordinator, until the Incident Commander (IC) arrives. The Incident Command System (ICS) staff with supporting on call personnel then fulfill the responsibilities of the Emergency Coordinator as discussed in WAC 173-303-360.

During events, facility personnel perform response duties under the direction of the BED. The Incident Command Post (ICP) is managed by either the senior Hanford Fire Department member present on the scene or senior Hanford Patrol member present on the scene (security events only). These individuals are designated as the IC and as such, have the authority to request and obtain any resources necessary for protecting people and the environment. The BED becomes a member of the ICP and functions under the direction of the IC. In this role, the BED continues to manage and direct facility operations.

A listing of BEDs by title, work location, and work telephone numbers is contained in Section 7.7. The BED is on the premises or is available through an "on call" list 24 hours a day. Names and home telephone numbers of the BEDs are available from the Patrol Operations Center (POC) in accordance with Permit Condition II.A.4.

7.3 Implementation of the Contingency Plan

The BED ensures that trained personnel identify the character, source, amount, and areal extent of the release, fire, or explosion to the extent possible. Identification of waste can be made by activities that can include, but are not limited to, visual inspection of involved containers, sampling activities in the field, reference to inventory records, or by consulting with facility personnel. Samples of materials involved in an emergency might be taken by qualified personnel and analyzed as appropriate. These activities must be performed with a sense of immediacy and shall include available information.

The BED shall use the following guidelines to determine if an event has met the requirements of WAC 173-303-360(2)(d):

1. The event involved an unplanned spill, release, fire, or explosion,

AND

2.a The unplanned spill or release involved a dangerous waste, or the material involved became a dangerous waste as a result of the event (e.g., product that is not recoverable.),

OR

2.b The unplanned fire or explosion occurred at the 242-A Evaporator or transportation activity subject to RCRA contingency planning requirements,

AND

3. Time urgent response from an emergency services organization was required to mitigate the event or a threat to human health or the environment exists.

As soon as possible, after stabilizing event conditions, the BED shall determine, in consultation with the site contractor environmental single point-of-contact, if notification to Ecology is needed to meet WAC 173 303-360(2)(d) reporting requirements. If all of the conditions under 1, 2, and 3 are met, notifications are to be made to Ecology. Additional information is found in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02, Section 4.2).

If review of all available information does not yield a definitive assessment of the danger posed by the incident, a worst-case condition will be presumed and appropriate protective actions and notifications will be initiated. The BED is responsible for initiating any protective actions based on their best judgment of the incident.

The BED must assess each incident to determine the response necessary to protect the personnel, facility, and the environment. If assistance from Hanford Patrol, Hanford Fire Department, or ambulance units is required, the Hanford Emergency Response Number (911 from site office phones/373-0911 from cellular phones) must be used to contact the POC and request the desired assistance.

7.3.1 Protective Actions Responses

Protective action responses are discussed in the following sections 7.3.1.1 and 7.3.1.2. The steps identified in the following description of actions do not have to be performed in sequence because of the unanticipated sequence of incident events.

7.3.1.1 Evacuation

The objective of a facility evacuation order is to limit personnel exposure to hazardous materials or dangerous/mixed waste by increasing the distance between personnel and the hazard. The scope of the evacuation includes evacuation of the facility due to an event at the facility as well as evacuation of the facility in response to a site evacuation order. Evacuation is directed by the BED when conditions warrant and applies to all personnel not actively involved in the event response or in emergency plan related activities.

The BED initiates the evacuation by directing an announcement be made to evacuate along with the evacuation location over the public address system and facility radios. Personnel proceed to a predetermined staging area (shown in Figure 7.2), or other safe upwind location, as determined by the BED. The BED determines the operating configuration of the facility and identifies any additional protective actions to limit personnel exposure to the hazard.

Emergency organization personnel or assigned operations personnel conduct a sweep of occupied buildings to ensure that all personnel and visitors have evacuated. For an immediate evacuation, accountability is performed at the staging area. The BED assigns personnel as accountability aides and staging area managers with the responsibility to ensure that evacuation actions are taken at the 242-A Evaporator. All implementing actions executed by the aides/managers are directed by the emergency response procedures. When evacuation actions are complete, the aides/managers provide a status report to the BED. The BED provides status to the IC.

7.3.1.2 Take Cover

The objective of the take cover order is to limit personnel exposure to hazardous or dangerous/mixed waste when evacuation is inappropriate or not practical. Evacuation might not be practical or appropriate because of extreme weather conditions or the material release might limit the ability to evacuate safely personnel.

The BED initiates the take cover by directing an announcement be made over the public address system and facility radios, and, as conditions warrant, by activating the 200 Area take cover alarms by calling the POC using 911 from site office phones/373-0911 from cellular phones. Actions to complete a facility take cover order are directed by the emergency response procedure. Protective actions associated with operations include configuring, or shutting down, the ventilation systems. Determination of additional take cover actions is based on operating configuration, weather conditions, amount and duration of release, and other conditions, as applicable to the event and associated hazard. As a minimum, personnel exposure to the hazard is minimized. The BED assigns personnel as accountability aides with responsibility to ensure that take cover actions are taken at all occupied buildings at the 242-A Evaporator. When take cover actions are complete, the aides/managers provide the BED with a status report.

7.3.2 Response to Facility Operations Emergencies

Depending on the severity of the event, the BED reviews the site wide procedures and 242-A Evaporator emergency response procedure(s) and, as required, categorizes and/or classifies the event. If necessary, the BED initiates area protective actions and Hanford Site Emergency Response Organization activation.

The steps identified in the following description of actions do not have to be performed in sequence because of the unanticipated sequence of incident events.

7.3.2.1 Loss of Utilities

A case-by-case evaluation is required for each event to determine loss of utility impacts. When a BED determines a loss of utility impact, actions are taken to ensure dangerous and/or mixed waste is being properly managed, to the extent possible given event circumstances. As necessary, the BED will stop operations and take appropriate actions until the utility is restored. If loss of utilities at the 242-A Evaporator results in a major process disruption/loss of plant control, notifications in Section 7.3.2.2 are performed.

7.3.2.2 Major Process Disruption/Loss of Plant Control

Upon loss of the MCS, the Shift Manager is notified while an attempt is made to return the MCS to service. If a dump of the vapor-liquid separator (C-A-1) vessel does occur, AW Tank Farm personnel are notified of impending over pressurization of Double-Shell Tank (DST) system tank 241-AW-102, and all personnel in the AW Tank Farm evacuate to the change trailer. Non-essential personnel exit the 242-A Evaporator facility.

The system condition is assessed, and corrective actions are implemented. Operations are placed on recirculation by securing the slurry pump and waste feed to the plant. Facility shutdown is accomplished by performing manual, localized actions such as system isolation, equipment shutdown, etc.

7.3.2.3 Pressure Release

If mixed waste release occurs, perform actions identified in Section 7.3.2.5.

7.3.2.4 Fire and/or Explosion

In the event of a fire, the discoverer activates a fire alarm; calls 911 from site office phones/373-0911 from cellular phones or verifies that 911 has been called. Automatic initiation of a fire alarm (by the smoke detectors, sprinkler systems, and pull boxes) is also possible.

- Unless otherwise instructed, personnel shall evacuate the area/building by the nearest safe exit and proceed to the designated staging area for accountability.
- On actuation of the fire alarm, ONLY if time permits, personnel should shut down equipment, secure waste, and lock up classified materials (or hand carry them out). The alarm automatically signals the Hanford Fire Department.
- The BED proceeds directly to the ICP, obtains all necessary information pertaining to the incident, and sends a representative to meet Hanford Fire Department.
- The BED provides a formal turnover to the IC when the IC arrives at the ICP.
- The BED informs the Hanford Site Emergency Response Organization as to the extent of the emergency (including estimates of dangerous waste, mixed waste, or radioactive material quantities released to the environment).
- If operations are stopped in response to the fire, the BED ensures that systems are monitored for leaks, pressure buildup, gas generation, and ruptures.
- Hanford Fire Department firefighters extinguish the fire as necessary.

NOTE: Following a fire and/or explosion, WAC 173-303-640(7) will be addressed for the 242-A Evaporator regarding fitness for use.

7.3.2.5 Hazardous Material, Dangerous and/or Mixed Waste Spill

Spills of hazardous materials, dangerous or mixed waste can result from many sources including process leaks, container spills or leaks, damaged packages or shipments, or personnel error. Spills of mixed waste are complicated by the need to deal with the extra hazards posed by the presence of radioactive materials.

Abnormal radiation actions also may be implemented if conditions are warranted. Timeframes for specific responses may be affected by radiological conditions.

- The discoverer notifies the BED and initiates SWIM response:
  - **S**tops work
  - **W**arns others in the vicinity
  - **I**solates the area
  - **M**inimizes the spill if possible
- The BED determines if emergency conditions exist requiring response from the Hanford Fire Department based on classification of the spill and injured personnel, and evaluates need to perform additional protective actions.
- If the Hanford Fire Department resources are not needed, the spill is mitigated with resources identified in Section 7.4 and proper notifications are made.
- If the Hanford Fire Department resources are needed, the BED calls 911 from site office phones/373-0911 from cellular phones.
- The BED sends a representative to meet the Hanford Fire Department.
- The BED provides a formal turnover to the IC when the IC arrives at the ICP.
- The BED informs the Hanford Site Emergency Response Organization as to the extent of the emergency (including estimates of dangerous waste, mixed waste, or radioactive material quantities released to the environment).
- If operations are stopped in response to the spill, the BED ensures that systems are monitored for leaks, pressure buildup, gas generation, and ruptures.
- Hanford Fire Department stabilizes the spill.

NOTE: For response to leaks or spills and disposition of leaking or unfit-for-use tank systems, refer to WAC 173-303-640(7).

7.3.2.5.1 Damaged or Unacceptable Shipments

The 242-A Evaporator is designed to receive waste from the double-shell tank (DST) system through existing underground piping. The notifications required by WAC 173-303-360(2)(j) and the reporting requirements of WAC 173-303-640(7)(d)(i) may be made via telephone conference.

7.3.3 Prevention of Recurrence or Spread of Fires, Explosions, or Releases

The BED, as part of the incident command system, takes the steps necessary to ensure that a secondary release, fire, or explosion does not occur. The BED will take measures, where applicable, to stop processes and operations, collect and contain released wastes and remove or isolate containers. The BED shall also monitor for leaks, pressure buildups, gas generation, or ruptures in valves, pipes or other equipment, whenever this is appropriate.

7.3.4 Incident Recovery and Restart of Operations

A recovery plan is developed when necessary in accordance with Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02, Section 9.2). A recovery plan is needed following an event where further risk could be introduced to personnel, the 242-A Evaporator, or the environment through recovery action and/or to maximize the preservation of evidence.

If this plan was implemented according to Section 7.3, the Washington State Department of Ecology is notified before operations can resume. The Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02, Section 5.1) discusses different reports to outside agencies. This notification is in addition to those required reports and includes the following statements:

- There are no incompatibility issues with the waste and released materials from the incident.

- All the equipment has been cleaned, fit for its intended use, and placed back into service.

The notification required by WAC 173-303-360(2)(j) and WAC 173-303-640(7)(d)(i) may be made via telephone conference. Additional information that Ecology requests regarding these restart conditions will be included in the required 15-day report identified in Section 7.5.

For emergencies not involving activation of the Hanford EOC, the BED ensures that conditions are restored to normal before operations are resumed. If the Hanford Site Emergency Response Organization was activated and the emergency phase is complete, a special recovery organization could be appointed at the discretion of RL to restore conditions to normal. This process is detailed in RL and contractor emergency procedures. The makeup of this organization depends on the extent of the damage and the effects. The onsite recovery organization will be appointed by the appropriate contractor's management.

7.3.5 Incompatible Waste

After an event, the BED or the onsite recovery organization ensures that no waste that might be incompatible with the released material is treated, stored, and/or disposed of until cleanup is completed. Cleanup actions are taken by 242-A Evaporator personnel or other assigned personnel. Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02, Section 9.2.3), describes actions to be taken.

Waste from cleanup activities is designated and managed as newly generated waste. Perform as necessary, field checks for waste compatibility before storage. Incompatible wastes are not placed in the same container. Containers of waste are placed in storage areas appropriate for their compatibility class.

If incompatibility of waste was a factor in the incident, the BED or the onsite recovery organization ensures that the cause is corrected.

7.3.6 Post Emergency Equipment Maintenance and Decontamination

All equipment used during an incident is decontaminated (if practicable) or disposed of as spill debris. Decontaminated equipment is checked for proper operation before storage for subsequent use. Consumable and disposed materials are restocked. Fire extinguishers are replaced.

The BED ensures that all equipment is cleaned and fit for its intended use before operations are resumed. Depleted stocks of neutralizing and absorbing materials are replenished, self-contained breathing apparatus are cleaned, and refilled, protective clothing is cleaned or disposed of and restocked, etc.

7.4 Emergency Equipment

Emergency resources and equipment for the 242-A Evaporator are presented in this section.

7.4.1 Fixed Emergency Equipment

Type	Location	Capability
Safety shower/eye wash station	1 – Aqueous makeup room –south side. Next to truck load in airlock and chemical storage tank 1 – Condenser room basement, SE corner 1 – Condenser room 4th floor	Assist in flushing chemicals/materials from body and/or eyes and face
Wet pipe sprinkler system	Located throughout the facility	Assist in the control of fire
Fire alarm pull boxes	Located throughout the facility	Activates the building fire alarm and notifies the HFD
Emergency lighting (lanterns)	Located throughout the facility	Provide 1 hour of temporary lighting
Back-up diesel generator	50 ft SE of the 242-A main entrance	Provide back-up power

7.4.2 Portable Emergency Equipment

Type	Location	Capabilities
General purpose fire extinguishers	Throughout the 242-A Evaporator facility	Fire suppression for class A, B, C, fires
Halotron fire extinguishers	Two in control room	Suppress electrical fires

7.4.3 Communications Equipment/Warning Systems

Type	Location	Capability
Fire alarms	Located throughout the facility in halls, corridors, and locker rooms	Audible throughout the 242-A Evaporator Building
Hanford Site Area Siren	200 East Area utility poles the nearest one is located along 4th street where it bends at 275EA to the southwest of 242-A Evaporator	Provides warning to personnel to take cover or evacuate. This siren is identified in DOE/RL-94-02, Section 5.2.5.
Operations process alarms from MCS or hard wired alarm panels	242-A Evaporator control room	Audible in the 242-A Evaporator control room
Public address system (PAX)	Located throughout the 242-A Evaporator Building (except in pump and evaporator rooms)	Provides communications and public address capabilities
Portable Radios	242-A control room	Communication to the 242-A control room
Telephone	242-A control room, office areas, AMU room, and condenser room.	Internal and external communications. Allows notification of outside resources (HFD, Hanford Patrol, etc.)

7.4.4 Personal Protective Equipment

Type	Location	Capability
Respirators	242-A respirator storage room	Filtered air for recovery of known hazards

7.4.5 Spill Control and Containment Supplies

Type	Location	Capability
Spill kit	Survey area next to personnel protective equipment storage room (exterior wall to Aqueous Make-up room), wall mounted	Provides spill control materials

7.4.6 Incident Command Post

If the ICP is activated, the BED will notify appropriate personnel of its location by either the public address system, radios, or telephones. Emergency resource materials are stored at each location. The IC could activate the Hanford Fire Department Mobile Command Unit if necessary.

7.5 Required Reports

Post incident written reports are required for certain incidents on the Hanford Site. The reports are described in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02, Section 5.1).

Facility management must note in the TSD unit-specific operating record, the time, date, and details of any incident that requires implementation of the contingency plan (refer to Section 7.3). Within fifteen (15) days after the incident, a written report must be submitted to Ecology. The report must include the elements specified in WAC 173-303-360(2)(k) and WAC 173-303-640(7)(d)(ii).

7.6 Plan Location and Amendments

Copies of this plan are maintained at the following locations:

- 242-A Evaporator Control Room
- Central Shift Office (274-AW)

This plan will be reviewed and immediately amended as necessary, in accordance with Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02, Section 14.3.1.1).

7.7 Facility/Building Emergency Response Organization

242-A Evaporator Building Emergency Directors			
Title		**Work Location**	**Work Phone**
Primary	Central Shift Manager	200 Areas. Primary location is the Central Shift Office	373-2689
Alternate	Alternate BED	200 Areas	373-2689

Names and home telephone numbers of the BEDs are available from the POC (373-3800) in accordance with Permit Condition II.A.4.

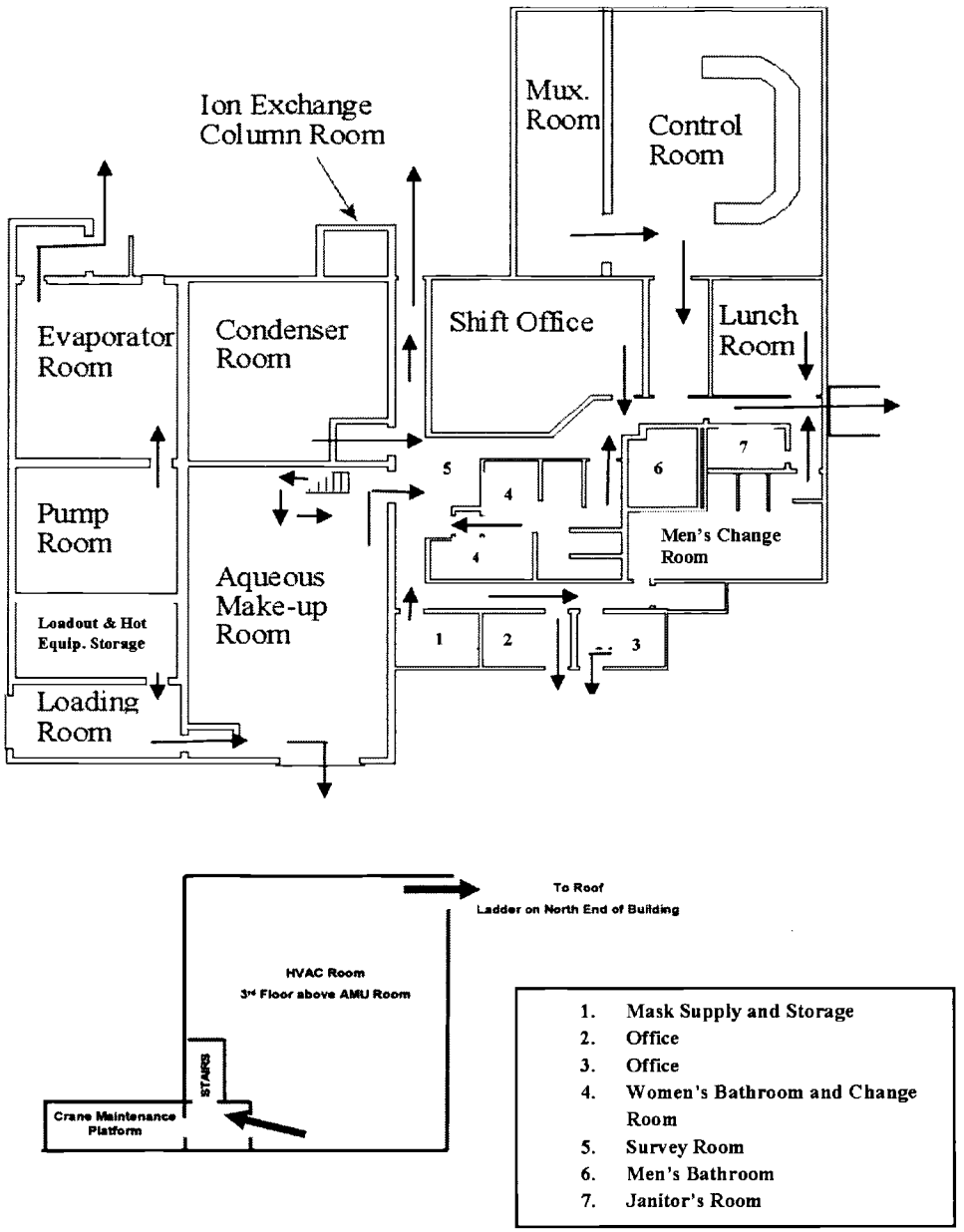

Figure 7.1. 242 A Evaporator Evacuation Routes

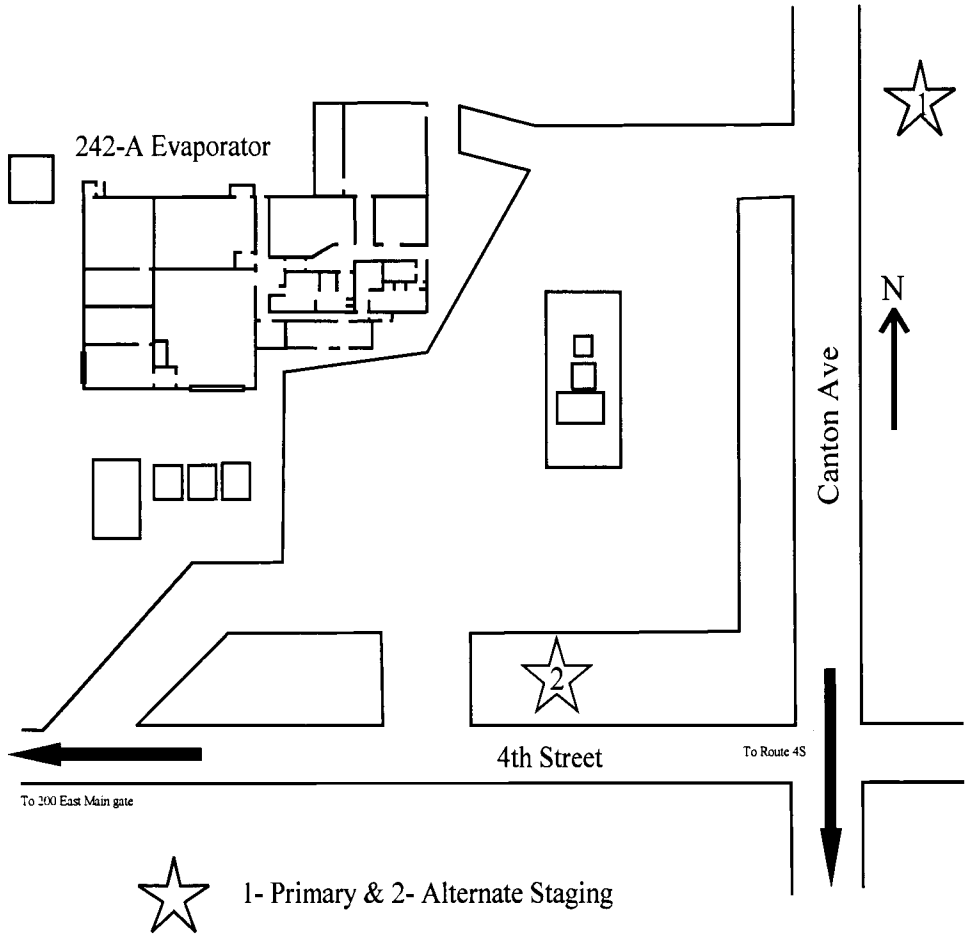

Figure 7.2. 242-A Evaporator Staging Areas

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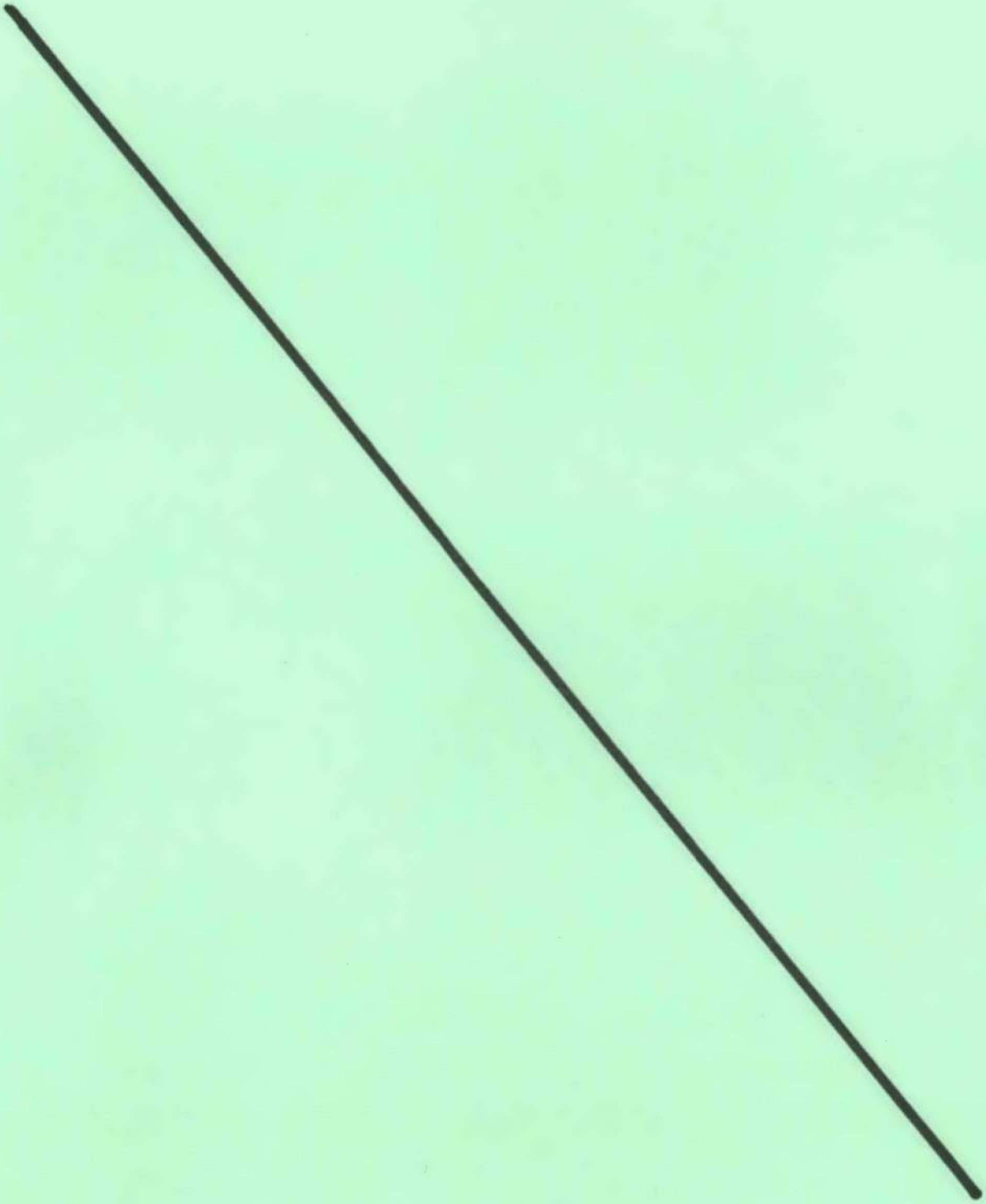

CHAPTER 8.0
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8.0 PERSONNEL TRAINING

Specific requirements for the Hanford Facility Personnel Training program are described in Permit Attachment 5, incorporated by reference. The Permittees will comply with the training matrix below which provides training requirements for Hanford Facility personnel associated with the 242-A Evaporator. Refer to the 242-A Evaporator Dangerous Waste Training Plan (DWTP) for a complete description of the personnel training requirements. A copy of the 242-A Evaporator DWTP will be placed in the Hanford Facility Operating Record, 242-A Evaporator unit-specific portion, and will be updated by the Permittee as unit-specific conditions change. Training received by Hanford Facility personnel will be commensurate with the duties they perform. Individuals are not required to receive training for work/duties they do not perform.

Waste management duties include those specified in Attachment 5 as well as those contained in WAC 173-303-330(1)(d). Training elements of WAC 173-303-330(1)(d) applicable to the 242-A Evaporator operations include the following:

- Procedures for using, inspecting, repairing, and replacing emergency and monitoring equipment.
- Key parameters for automatic waste feed cut-off systems.
- Communications or alarm systems.
- Response to fires or explosions.
- Shutdown of operations.

8.1. Description of Training Plan

In accordance with Permit Condition II.C.3, the unit-specific portion of the Hanford Facility Dangerous Waste permit application must contain a description of the training plan. Training plan documentation is maintained outside of the Hanford Facility Dangerous Waste Part B permit application and the Permit. Therefore, changes made to the training plan documentation are not subject to the Permit modification process. However, the training plan documentation is prepared to comply with WAC 173-303-330(2).

Documentation prepared to meet the training plan consists of hard copy and/or electronic media as provided by Permit Condition II.C.1. The training plan documentation consists of one or more documents and/or a training database with all the components identified in the core document.

A description of how training plan documentation meets the three items in WAC 173-303-330(2) is as follows:

1. -330(2)(a): "The job title, job description, and name of the employee filling each job. The job description must include requisite skills, education, other qualifications, and duties for each position."

   Description: The specific Hanford Facility personnel job title/position is correlated to the waste management duties. Waste management duties relating to WAC 173-303 are correlated to training courses to ensure training is properly assigned.

   A listing of Hanford Facility personnel who carry out job duties relating to Treatment, Storage, and Disposal (TSD) unit waste management operations at the 242-A Evaporator are maintained. Individuals who are not performing duties of the Dangerous Waste Worker Category identified in Table 8.1 due to reassignment, medical restriction, or other limiting factors do not require current training for that category. These individuals must complete the required training for the Dangerous Waste Worker Category prior to resuming duties associated with that category.

   Information on requisite skills, education, and other qualifications for job titles/positions are addressed by providing a reference where this information is maintained (e.g., human resources). Specific information concerning job title, requisite skills, education, and other qualifications for personnel can be provided upon request.

2. -330(2)(b): "A written description of the type and amount of both introductory and continuing training required for each position."

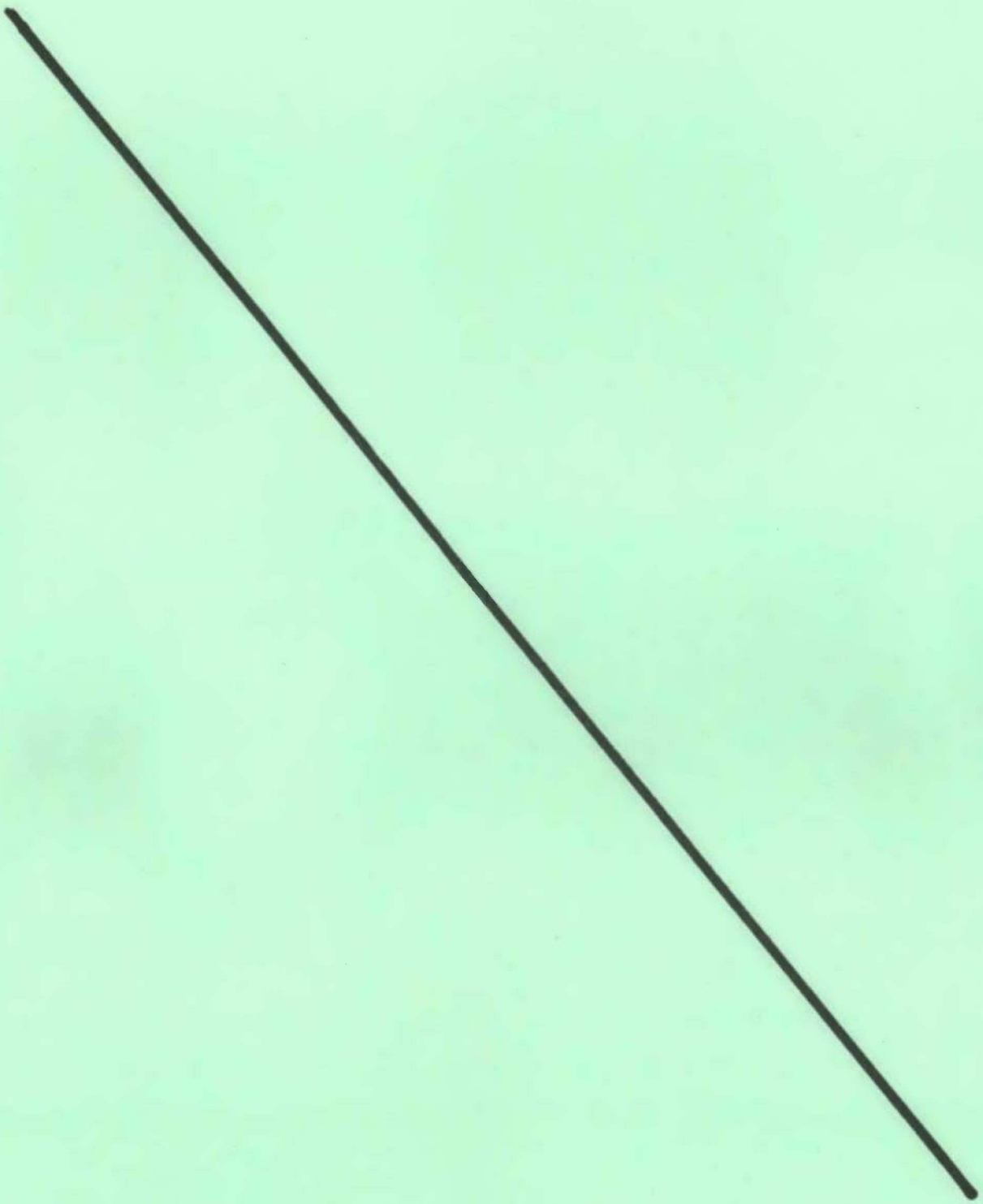
   Description: In addition to the outline provided in Attachment 5, Section 5.1, training courses developed to comply with the introductory and continuing training programs are identified and described in the training plan documentation. The type and amount of training is specified in the training plan documentation as shown in Table 8.1.

3. -330(2)(c): "Records documenting that personnel have received and completed the training required by this section. The Department may require, on a case-by-case basis, that training records include employee initials or signature to verify that training was received."

   Description: Training records are maintained consistent with Attachment 5, Section 5.3.

Table 8.1. 242-A Evaporator Training Matrix

	Training Category				
Attachment 5 Training Category	**General Hanford Facility Training**	**Contingency Plan Training**	**Emergency Coordinator Training**	**Operations Training**	
Operating Unit 4: 242A Evaporator	**Orientation Program**	**Emergency Hazards Check List**	**Building Emergency Training**	**General Waste Management**	**Tank System Management**
Dangerous Waste Worker Categories					
Waste Worker	X	X	X	X	X
Waste Worker Supervisor/ Manager	X	X	X	X	
Advanced Waste Worker	X	X	X	X	
Building Emergency Director	X	X	X		



CHAPTER 11.0
CLOSURE

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CHAPTER 11.0
CLOSURE

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11.0 CLOSURE

This chapter describes the planned activities and performance standards for closing the 242-A Evaporator. Final closure will begin when the 242-A Evaporator is no longer needed.

11.1 Closure Plan

The 242-A Evaporator will be clean closed with respect to dangerous waste contamination that resulted from operation as a Treatment, Storage, and Disposal (TSD) unit. To facilitate closure, the 242-A Evaporator is being viewed as consisting of six components: tanks, ancillary equipment, piping, concrete floors/liners, structures, and underlying soil. Only areas that have treated, stored, or handled dangerous waste will undergo closure activities. Remedial actions with respect to contamination that was not a result of use of these areas for treatment, storage, or handling of dangerous waste are outside the scope of this closure plan.

Contaminated equipment, tanks, and piping removed from the 242-A Evaporator will be considered "debris" and transported to an appropriate permitted treatment, storage, or disposal unit for final disposition. Uncontaminated structures will be left for future use or disassembled, dismantled, and removed for disposal. Uncontaminated equipment and structures could include aqueous makeup, HVAC and piping, steam condensate and cooling water piping, the control room, change rooms and administrative/office areas.

The pipes located west and north of the 242-A Evaporator, which connect to A Farm and AW Farm, are in the same bundles with pipes used for transfers between tanks in the Double-Shell Tank (DST) System. To minimize radiation exposure during closure, these pipes will be closed at the same time the piping for the DST System is closed. Clean closure requires decontamination or removal and disposal of all dangerous waste, waste residues, contaminated equipment, soil, or other material established in accordance with the clean closure performance standards of WAC 173-303-610(2). This and future closure plan revisions will provide for compliance with these performance standards. All work will be performed as low as reasonably achievable (ALARA) with respect to worker exposure to dangerous and/or any other workplace hazards. Activities that are planned to achieve clean closure are presented in the following sections.

11.2 Closure Performance Standard

Clean closure, as provided for in this plan, and in accordance with WAC 173-303-610(2), will eliminate future maintenance and will be protective of human health and the environment.

After closure, the appearance of the land where the 242-A Evaporator is located will be consistent with the appearance and future use of the surrounding land areas. This closure plan proposes to leave clean structures and equipment in place after closure for potential future operations. This need will be evaluated at the time of closure.

11.2.1 Closure Standards for Metal Surfaces, and Concrete

This closure plan proposes use of a 'clean debris surface' (defined in the following paragraph) as the clean closure performance standard for the metal surfaces, and concrete that will remain after closure. This approach is consistent with Ecology guidance (Ecology 1994) for achievement of clean closure.

Attainment of a clean debris surface can be verified visually in accordance with the standard that states, "A clean debris surface means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area" (40 CFR 268.45).

Decontamination of concrete, per the 'debris rule' is based on a physical extraction method (40 CFR 268.45, Table 1). The performance standard is based on removal of the contaminated layer of debris. The physical extraction performance standard for concrete is removal of 0.6 centimeter of the surface layer and treatment to a clean debris surface.

11.2.2 Closure Standards for Tanks

Using the 242-A Evaporator's decontamination system, the tank system could be flushed and decontaminated. The rinsate will be sampled and analyzed. Results of the analysis with less than designation limits for the constituents of concern will be accepted as indicating that the tanks are clean with respects to dangerous waste residues. An alternative to decontaminating the tanks is to remove and dispose of the tanks accordingly.

11.2.3 Closure Standards for Internal and/or External Piping

The internal and/or external piping of 242-A Evaporator will be flushed and drained as part of closure. For piping where the contaminated surfaces can be inspected, an inspection will be performed to see if the piping meets the clean debris surface standard in 40 CFR 268.45 incorporated by reference and can be declared non-dangerous in accordance with WAC 173-303-071(3)(qq). If it is not possible to inspect the contaminated surfaces or meet the clean debris surface performance standard, the particular piping of concern will be removed, designated, and disposed of accordingly.

The feed sampler (SAMP-F-1) located in a sample enclosure in the Hot Equipment Storage room has been isolated and blanked and will be closed during closure of the 242-A Evaporator. The feed sampler line was designed so that the piping does not contain any level/flat segments and thus facilitates active gravity drainage of liquids. The remaining portion of the feed sampler line that exists between Nozzles J and K is sloped 1° from Nozzle J to a 180° bend and sloped 1° from the 180° bend to Nozzle K.

Dangerous and/or mixed-waste materials generated during closure activities will be managed in accordance with WAC 173-303-610(5). Removal of any dangerous wastes or dangerous constituents during partial or final closure will be handled in accordance with applicable requirements of WAC 173-303-610(5).

11.2.4 Closure Standards for Ancillary Equipment

Ancillary equipment is defined as pumps and other miscellaneous equipment not otherwise specified in this closure plan. Ancillary equipment will be removed and disposed.

11.2.5 Closure Standards for Underlying Soils

Clean closure of soil under the 242-A Evaporator will be accomplished by determining that the coated concrete floor and stainless steel liners, kept contaminants from reaching the soil. The coated concrete and liners provided secondary containment for all the tanks, process piping, and ancillary equipment within the building. Unless inspections identify potential through-thickness cracks indicating containment failure and a subsequent potential for soil contamination from TSD unit operations, the soil will be considered clean closed. However, if inspections identify such cracks, and there have been documented spills in the vicinity, potential soil contamination will be investigated. Soils will be sampled and analyzed for constituents of concerns. If the soil analytical results determine that, the constituents of concern are at or below agreed to regulatory cleanup levels, the soil will be considered clean closed. Permit Condition II.K defines regulatory cleanup levels. Sampling and disposal objectives will be determined at the time of closure activities through the data quality objectives process. If verification sampling is required, a sampling analysis plan will be prepared before closure in a manner consistent with Ecology guidance (Ecology publication #94-111 dated 2005) for achievement of clean closure.

11.3 Closure Activities

At the time of closure, the closure plan will be modified as necessary to reflect current regulations and information. If it is determined that clean closure is not possible, the closure plan will be modified to address required postclosure activities.

11.3.1 General Closure Activities

Closure of the 242-A Evaporator will include removal of accumulated liquid waste (i.e., liquid remaining from evaporator campaigns) by transferring the waste to the DST System and/or Liquid Effluent Retention Facility (LERF). After the waste has been removed, clean closure of the tanks, process equipment, the piping, concrete/liners, and the structures will be accomplished by decontaminating the components, if required and demonstrating that clean closure performance standards are met in accordance with WAC 173-303-610. Clean closure of the soil will be accomplished by demonstrating that the concrete and liners kept the contaminants from reaching the soil. If it is determined that soil contamination is possible, investigation and cleanup of the soils will also be managed in accordance with WAC 173-303-610(2)(b).

Equipment or materials (personnel protective equipment, steam cleaners, etc.) used in performing closure activities will be decontaminated or disposed at a permitted TSD facility as appropriate.

11.3.2 Constituents of Concern for Closure for 242-A Evaporator

Based on process knowledge and the risk to human health and the environment, the constituents of concern for closure will be selected from the list of dangerous waste numbers in Chapter 1.0 through the data quality objective process.

11.3.3 Removing Dangerous Waste

All of the waste inventory at the 242-A Evaporator will be processed before closure. Any residue remaining in piping and equipment will be removed to an appropriate TSD unit.

11.3.4 Decontaminating Structures, Equipment, and Soils

Before closure activities begin, all waste inventories will be removed. To facilitate closure, tanks, internal and/or external piping, ancillary equipment, concrete floors/liners, structures, and soil directly beneath the structure will be decontaminated, as necessary, to demonstrate that the clean closure performance standards are met.

Removal and disposal of most of the components will be determined at the time of closure. Clean closure of the soil will be accomplished by demonstrating that the concrete/liners kept contaminants from reaching the soil.

11.3.4.1 Tanks

In accordance with WAC 173-303-640(8) at closure all pumpable waste will be removed from the interior of the tanks, including the internal components such as the process condensate agitator. Both interior and exterior tanks surfaces will be decontaminated by flushing or spraying with steam, a water-soluble cleaner, or other approved method, or removed as debris and disposed appropriately.

If the tanks are decontaminated, the tanks will be inspected visually for compliance with the clean debris surface standard (40 CFR 268.45, Table 1, Extraction Technologies). If any areas are found not to meet the clean debris surface performance standard, these areas will be decontaminated in-place. Per the debris rule, only removal of contaminants from the surface layer is necessary for metal surfaces. Contamination will be removed as specified in 40 CFR 268.45, Table 1, Extraction Technologies and/or other Ecology approved methods.

If the decontamination option is used, the outside of the tanks also will be inspected for compliance to the clean debris surface standard. Any areas found not to meet this performance standard will be decontaminated in-place. Contamination will be removed from the surface layer using any of the methods described for internal tank decontamination as specified in *Alternate Treatment Standards for Hazardous Debris* (40 CFR 268.45, Table 1, Extraction Technologies and/or other Ecology approved methods).. Before using decontamination solutions on the outside of the tanks, the floor will be inspected for cracks or other openings that could provide a pathway to soil.

This inspection will be performed as described in Section 11.2.1 of this chapter in conjunction with mapping of potential through-thickness cracks. Any such cracks will be mapped. The cracks will be sealed before beginning treatment or other engineered containment devices (e.g., collection basins) will be used to collect and contain solutions.

Decontamination waste will be generated as a result of decontamination activities. Decontamination waste may include but not be limited to the following: contaminated rags, and decontamination residue (liquids and solvents used in the decontamination process). This waste will be collected, designated, and managed in accordance with WAC 173-303. If it is not possible to meet the closure by removal or decontamination (clean closure) performance standard, contaminated portions of the tanks could be removed, designated, and disposed of in accordance with 40 CFR 268, incorporated by reference by WAC 173-303-140 as appropriate. The inspections for a clean debris surface will be documented on an inspection record.

11.3.4.2 Internal and/or External Piping and Ancillary Equipment

The internal piping and ancillary equipment for the 242A Evaporator will be flushed and drained as part of closure. For piping where the contaminated surfaces can be inspected, an inspection will be performed to see if the piping meets the clean debris surface standard in 40 CFR 268.45 and can be declared non-dangerous. If it is not possible to meet the clean debris surface standard or the piping cannot be inspected, portions of the internal piping will be removed, designated, and disposed of accordingly.

External piping (transfer lines) and ancillary equipment between 242A and LERF consists of below grade and above grade piping. Below grade piping will be dispositioned at closure either by removal, designation and disposal in accordance with WAC 173-303-610(5) and 40 CFR 268 or closed in accordance with another Ecology approved process. For above grade piping, it will be dispositioned consistent with the provisions for internal piping.

Rinsate from the external piping and internal piping will be processed through ETF. Details regarding the process for rinsing any internal and external piping and ancillary equipment will be provided in the closure plan in accordance with WAC 173-303-610(3)(a)(v) upon modification as stated in Section 11.6 Dangerous and/or mixed-waste generated during closure activities will be managed in accordance with WAC 173-303-610(5). Removal of any dangerous wastes or dangerous constituents during partial or final closure will be handled in accordance with applicable requirements of WAC 173-303-610(5).

If the performance standards are not met, the interior surfaces will be cleaned using an appropriate decontamination method and the method repeated until the surfaces meet the clean closure performance standard.

The 207-A pump pit, located east of the 242-A Evaporator, will be closed using the performance standards for pipes and concrete (e.g., WAC 173-303-610(5) and 40 CFR 268 debris rule standards Table 1, Extraction technologies.). A visual inspection will be performed. If the interior surfaces meet the performance standards (clean debris surface), the 207-A pump pit will be considered clean closed.

If the performance standards are not met for any components described above, the interior surfaces will be cleaned using an Ecology approved decontamination method and the method repeated until the surfaces meet the clean closure (clean debris surface) performance standard; or a decision will be made to remove, designate and dispose of piping and equipment in accordance with WAC 173-303.

11.3.4.3 Concrete/Liner

The coated concrete floor and the pump room sump liner provide secondary containment for all the tanks, process piping, and ancillary equipment. All concrete and liners will be inspected visually and surveyed radiologically before any decontamination. The purpose of the inspection will be twofold: to identify and map any cracks in the concrete that might have allowed contaminants a pathway to the soil below and to identify areas that potentially are contaminated with dangerous waste or dangerous waste residues. The inspection standard will be a clean debris surface as defined in Section 11.2 .1.

The inspection of the concrete for a clean debris surface will be documented on an inspection record. Those areas already meeting the standard will be clean closed as is.

Those potentially contaminated areas will undergo decontamination to meet the clean closure standard of a clean debris surface. The concrete will be washed down; the rinsate collected, designated, and disposed of accordingly. The concrete will be re-inspected for a clean debris surface. Concrete surfaces indicated by visual examination, as potentially still being contaminated will have the surface layer removed to a depth of 0.6 centimeter by scabbing or other approved methods. This will not threaten the environment, even if potential through-thickness cracks had been found during the inspection, because concrete decontamination (scabbing) will not employ liquid solutions that could enter cracks and because scabbing residues will be vacuumed away from cracks as any residue is generated.

Achievement of a clean debris surface will be documented on an inspection record. Decontamination residues will be collected, designated, and managed as appropriate.

11.3.4.4 Structures

If contaminated with either dangerous or mixed waste constituents, structures will be decontaminated and/or disassembled, if necessary, packaged, and disposed in accordance with existing land disposal restrictions (WAC 173-303-140).

Closure steps could include the following activities.

- Containerize (as necessary and practicable) and remove any remaining waste.
- Review operating records for spillage incidents and visually inspect area surfaces for evidence of contamination or for cracks that could harbor contamination or allow the escape of decontamination solutions. Inspect storage area surfaces for visible evidence of contamination (e.g., discoloration, material degradation, wetness, and odor). If contamination is evident, the affected area(s) will be decontaminated.
- Decontaminate walls and floors to minimize the potential for loose contamination and to facilitate any required radiation surveys and/or chemical field screening. Wash down could be by water rinse or high-pressure, low-volume steam cleaning coupled with a detergent wash. After decontamination, the building walls and floor will be compared to closure performance standards.
- Collect rinsate and manage as dangerous waste for appropriate disposal.
- Secure (lock) personnel entries into building and post doors with appropriate warning signs.

Clean closure of structures will occur in accordance with WAC 173-303-610. Remediation of soil contamination beneath or around containment buildings will be performed in conjunction soil closure requirements.

11.3.4.5 Underlying Soils

Clean closure of soil under the 242-A Evaporator will be accomplished by demonstrating that the coated concrete floor and stainless steel liners kept contaminants from reaching the soil. The coated concrete floor provided secondary containment for all the tanks, process piping, and ancillary equipment. Unless inspections identify potential through-thickness cracks indicating containment failure and a subsequent potential for soil contamination from TSD unit operations, the soil will be considered clean closed. However, if inspections identify such cracks, and there have been documented spills in the vicinity, potential soil contamination will be investigated.

Where it is possible to inspect visually directly beneath the tanks, a visual inspection will be performed. Where it is not possible to inspect visually beneath the tanks, an evaluation of the tank integrity will be made. The condition of the tank will be evaluated to determine if there was any potential for leakage. If no cracks, severe corrosion, or evidence of leaks is observed, it will be reasoned that mixed or dangerous waste solutions could not have penetrated to the soil directly below the tank.

11.4 Maximum Waste Inventory

The 242-A Evaporator is used to treat mixed waste from the DST System by removing water and most volatile organics. Two waste streams leave the 242-A Evaporator following the treatment process. The first waste stream, the concentrated slurry (in which approximately half the water content is removed and a portion of the volatile organics), is pumped back into the DST System. The second waste stream, process condensate (containing a portion of the volatile organics removed from the mixed waste during the evaporation process), is routed through condensate filters before being transferred to LERF. The 242-A Evaporator is used to treat up to 870,642 liters of mixed waste per day.

The condensate collection tank (TK-C-100) receives process condensate and potentially contaminated drainage from the vessel vent system. The maximum design capacity for the C-100 tank is 67,380 liters.

Vapor-liquid separator, C-A-1, is located in the evaporator room and is used to separate vapor from the boiling slurry solution and deentrain liquid from the vapor before it enters the condensers in the condenser room. The maximum design capacity of C-A-1 is 103,217 liters.

11.5 Closure of Tanks

Clean closure of 242-A Evaporator will consist of the removal and disposal of all dangerous waste and the decontamination and/or removal and disposal of contaminated equipment, including tanks.

11.6 Schedule for Closure

Closure of 242-A Evaporator is not anticipated to occur within the next 15 to 20 years. The actual year of closure will depend on the time required for current waste to be processed and what role the 242-A Evaporator will play in processing additional waste generated during future activities in the 200 Areas. Other factors affecting the year of closure include changes in operational requirements, lifetime extension upgrades, and unforeseen factors. When a definite closure date is established, a revised closure plan will be submitted to Ecology. The activities required to complete closure are planned to be accomplished within 180 days in accordance with WAC 173-303-640(4)(c). Should a modified schedule be necessary, a revised schedule will be presented and agreed to before closure in accordance with WAC 173-303-640(4)(b).

325 Hazardous Waste Treatment

Change Control Log

Change Control Logs ensure that changes to this unit are performed in a methodical, controlled, coordinated and transparent manner. Each unit addendum will have a "**Last Modification Date**" which represents the last date the portion of the unit has been modified. The "**Modification Number**" represents Ecology's method for tracking the different versions of the permit. This log will serve as an up to date record of modifications and version history of the unit.

Last modification to 325 Hazardous Waste Treatment **September 30, 2015**

Addenda	Last Modification Date	Modification Number
Conditions	09/30/2015	8c.2015.Q3
A. Part A Form	07/2015	
B. Waste Analysis Plan	05/2014	
C. Process Information	05/2014	
D. Reserved		
E. Procedures to Prevent Hazards	05/2014	
F. Preparedness & Prevention	05/2014	
G. Personnel Training	05/2014	
H. Closure Plan	05/2014	
I. Inspection Requirements	05/2014	
J. Contingency Plan	09/30/2015	8c.2015.Q3
J. Applicability Matrix	09/30/2015	8c.2015.Q3

OPERATING UNIT GROUP 5 PERMIT CONDITIONS
325 HAZARDOUS WASTE TREATMENT UNITS

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OPERATING UNIT GROUP 5 PERMIT CONDITIONS
325 HAZARDOUS WASTE TREATMENT UNITS

UNIT DESCRIPTION

The 325 Hazardous Waste Treatment Units (325 HWTUs) store and treat dangerous and/or mixed waste in containers and in a 1,218-liter tank. The 325 HWTUs consist of the Shielded Analytical Laboratory (SAL) that includes Rooms 32, 200, 201, 202, and 203; the Cask Handling Area that includes portions of Rooms 603 and 604A; the Truck Lock, Room 610; and the Hazardous Waste Treatment Unit (HWTU) that includes Rooms 520, 524, and 528 of the 325 Building located in the south portion of the 300 Area. It also includes the nearby 3714 Pad area.

LIST OF ADDENDA SPECIFIC TO OPERATING UNIT GROUP 5

Addendum A	Part A Form, dated May 2014
Addendum B	Waste Analysis Plan, dated May 2014
Addendum C	Process Information, dated May 2014
Addendum D	Groundwater Monitoring (Reserved)
Addendum E	Procedures to Prevent Hazards, dated May 2014
Addendum F	Preparedness and Prevention, dated May 2014
Addendum G	Personnel Training, dated May 2014
Addendum H	Closure Plan, dated May 2014
Addendum I	Inspection Requirements, dated May 2014
Addendum J	Contingency Plan, dated September 30, 2015

DEFINITIONS

Reserved

ACRONYMS

Reserved

III.5.A COMPLIANCE WITH UNIT-SPECIFIC PERMIT CONDITIONS

III.5.A.1 The Permittees will comply with all conditions in this Chapter and its addenda with respect to dangerous and/or mixed waste management and dangerous waste management units in 325 Hazardous Waste Treatment Units (HWTUs), in addition to requirements in Permit Parts I and II.

III.5.B GENERAL WASTE MANAGEMENT

III.5.B.1 The Permittees are authorized to accept dangerous and/or mixed waste that satisfies the waste acceptance criteria in Addendum B according to the waste acceptance procedures in Addendum B for storage in the 325 HWTUs.

III.5.B.2 The Permittees are authorized to store and/or treat dangerous and/or mixed waste physically located in the 325 HWTUs as of the effective date of this Permit, and wastes accepted for storage or treatment pursuant to Permit Condition III.5.B.1.

III.5.B.3 The Permittees will maintain the physical structure of the 325 HWTUs as documented in Addendum C, Section C.1.4.1. [WAC 173-303-630(7)]

III.5.B.4 The Permittees will conduct waste loading and unloading operations consistent with and no less stringent than those practices described in Addendum F, Section F.2.1. [WAC 173-303-395]

III.5.C WASTE ANALYSIS

III.5.C.1 The Permittees will comply with requirements in Addendum B for waste analysis for all dangerous and/or mixed waste managed at this unit. [WAC 173-303-300(5)]

III.5.C.2 The Permittees will have an accurate and complete waste profile as described in Addendum B, Section B.1.1.1.2.1 for every waste stream accepted by the 325 HWTUs. [WAC 173-303-380(1)(a)(b)]

III.5.C.3 The Permittees will place a copy of each waste profile required by Permit Condition II.5.C.2 in the Hanford Facility Operating Record, 325 HWTUs file required by Permit Condition II.I.2. [WAC 173-303-380(1)(a)(b)]

III.5.C.4 The Permittees will comply with the requirements in Addendum C, Sections C.1.11, and C.2.1.5, to prevent hazards from ignitable, reactive, or incompatible wastes. [WAC 173-303-395(1)]

III.5.C.5 The Permittees will make a copy of the waste profile required by Permit Conditions III.5.C.2 available upon request. [WAC 173-303-380(1)(a) and (b)]

III.5.D RECORDKEEPING AND REPORTING

III.5.D.1 The Permittees will place the following into the Hanford Facility Operating Record, 325 HWTUs File required by Permit Conditions II.I.2: [WAC 173-303-380]

III.5.D.1.a A description of and quantity of each dangerous and/or mixed waste accepted for storage in the 325 HWTUs; [WAC 173-303-380(1)(a)]

III.5.D.1.b Records and results of any sampling or analysis of wastes accepted for storage at the 325 HWTUs, and from any other sampling and analysis required by Addendum B; [WAC 173-303-380(1)(c)]

III.5.D.1.c Summary reports and details of all incidents that require implementation of Addendum J, Contingency Plan according to the requirements of Permit Conditions III.5.G.1; [WAC 173-303-380(1)(d)]

III.5.D.1.d An inspection log, or a summary of such log, of inspections conducted pursuant to Permit Conditions III.5.H.1; [WAC 173-303-380(1)(e)]

III.5.D.1.e Records required by WAC 173-303-380(1)(k) and (o), incorporated by reference.

III.5.E SECURITY

III.5.E.1 The Permittees will maintain security at the 325 HWTUs according to the requirements in Addendum E, and in accordance with Permit Conditions II.M. [WAC 173-303-310(2)(b)]

III.5.E.2 The Permittees will post warning signs at all entrances to the 325 HWTUs. [WAC 173-303-310(2)(a)]

III.5.F PREPAREDNESS AND PREVENTION

III.5.F.1 The Permittees will comply with the Preparedness and Prevention requirements in Addendum F. [WAC 173-303-340]

III.5.G CONTINGENCY PLAN

III.5.G.1 The Permittee will comply with Addendum J, in addition to the requirements of Permit Conditions II.A when applicable. Enforceable portions of Addendum J are identified in Permit Addendum J, Page J-i. [WAC 173-303-350]

III.5.H **INSPECTIONS**

III.5.H.1 The Permittee will perform inspections of the 325 HWTUs according to Addendum I, Inspection Requirements. The inspection shall include:

III.5.H.1.a All monitoring equipment, safety and emergency equipment, security devices and operating and structural equipment that help prevent, detect, or respond to hazards to the public health or the environment. [WAC 173-303-320(2)]

III.5.H.2 The inspection schedule required by Permit Conditions III.5.H.1 will provide the frequency of inspection for specific items. The frequency should be based on the rate of possible deterioration of equipment and the probability of an environmental or human health incident. Areas subject to spills must be inspected daily when in use. [WAC 173-303-320(2)(c)]

III.5.H.3 The Permittee must remedy any problems revealed by inspections conducted pursuant to Permit Conditions III.5.H.1, on a schedule that prevents hazards to the public health and the environment. Where a hazard is imminent or has already occurred, remedial action must be taken immediately. [WAC 173-303-320(3)]

III.5.H.4 The Permittees will place a copy of the inspection requirements and schedule prepared according to Permit Conditions III.5.H.1 in the Hanford Facility Operating Record, 325 HWTUs File required by Permit Conditions II.I.2. [WAC 173-303-320(2)(a)]

III.5.H.5 The Permittee will keep an inspection log or summary of inspections conducted pursuant to Permit Conditions III.5.H.1, including at a minimum the following:

III.5.H.5.a Date and time of the inspection;

III.5.H.5.b Printed name and the handwritten signature of the inspector;

III.5.H.5.c Notation of the observations made;

III.5.H.5.d An account of spills or discharges in accordance with Permit Conditions II.E, and the date and description of any repairs or remedial actions taken.

III.5.I **TRAINING PLAN**

III.5.I.1 The Permittee will include Addendum G training requirements in the written training plan required by Permit Conditions II.C. [WAC 173-303-330]

III.5.J **OTHER GENERAL REQUIREMENTS**

III.5.J.1 The Permittees will conduct waste management activities within 325 HWTUs authorized by this Permit according to the requirements in Addendum F, Sections F.3.1, and F.3.2. The Permittees will document compliance with these provisions in the Hanford Facility Operating Record, 325 HWTUs File. [WAC 173-303-395(1)(a)-(c)]

III.5.J.2 The Permittees will comply with the requirements of WAC 173-303-395(2), incorporated by reference.

III.5.K **CLOSURE**

III.5.K.1 The Permittees will close the 325 HWTUs in accordance with Addendum H, Closure Plan. [WAC 173-303-610(4)]

III.5.K.2 The Permittees will amend the Closure Plan in accordance with Permit Conditions II.J.3 and Addendum H. [WAC 173-303-610(3)(b)]

III.5.K.3 The Permittees will provide Ecology with a Notice of Closure in accordance with Addendum H. [WAC 173-303-610(3)(c)]

III.5.L **POST CLOSURE**

Reserved

III.5.M **CRITICAL SYSTEMS**

Reserved

III.5.N **RESERVED**

III.5.O **CONTAINERS**

III.5.O.1 Container Storage Unit Standards

III.5.O.1.a The Permittees will maintain the integrity of container storage secondary containment as documented in Addendum C, Sections C.1.4, and C.1.5, including all chemically resistant coatings and sealants described in Addendum C, Section C.1.4.1, as necessary to ensure any spills or releases do not migrate to the underlying concrete or soils.

III.5.O.1.b The Permittees will place documentation of any damage to and subsequent repairs of chemically resistant coatings in the Hanford Facility Operating Record, 325 HWTUs File required by Permit Conditions II.I.2. [WAC 173-303-630(7)]

III.5.O.1.c Within thirty (30) days of the effective date of this Permit, the Permittee will place documentation in the Hanford Facility Operating Record, 325 HWTUs File identifying the specific chemical resistant floor and wall coatings used for secondary containment in the 325 HWTUs. This documentation will demonstrate that these materials are impervious to the wastes managed in each of the 325 HWTUs cells to contain spills until the collected material is detected and removed. [WAC 173-303-630(7)(a)(i)]

III.5.O.2 Container Management Standards

III.5.O.2.a The Permittees are authorized to manage containerized wastes at the 325 HWTUs according to the requirements of Addendum C, Section C.1.2. [WAC 173-303-630(2)]

III.5.O.2.b The Permittees will store containers according to the waste segregation and storage arrangements specified in Addendum C, and the hazard class assigned as part of the waste acceptance process required by Addendum B. [WAC 173-303-630(7), WAC 173-303-395(2)]

III.5.O.2.c In addition to storage capacity limitations specified elsewhere in this Chapter, the Permittees will ensure that the storage limits for flammable liquids, combustible liquids, combustible fibers, flammable gasses and liquefied flammable gasses identified in WAC 173-303-630(8)(b) are not exceeded at any time. In addition, the Permittees will ensure the capacity limitation for explosive waste in WAC 173-303-630(8)(a) is not exceeded at any time. [WAC 173-303-630(8)]

III.5.O.2.d The Permittees will label containers according to the requirements of Addendum C, Section C.1.3. The Permittees will also ensure that:

III.5.O.2.d.i Container labels are not obscured or are otherwise unreadable;

III.5.O.2.d.ii Container labels are not obscured, removed, or otherwise unreadable in the course of inspection;

III.5.O.2.d.iii Container labels are removed or completely obscured when the container to which they are attached is rendered empty. [WAC 173-303-630(3)]

III.5.O.2.e The Permittees will ensure wastes are compatible with containers in which they are managed and with other wastes stored at the 325 HWTUs according to the requirements Addendum C, Section C.1.11, and Addendum F, Section F.3.2. [WAC 173-303-630(4), WAC 173-303-630(9)]

III.5.O.2.f The Permittees will comply with the requirements for managing wastes in containers in WAC 173-303-630(5)(a) and (b), incorporated by reference.

III.5.O.2.g The Permittees will ensure the physical arrangement and spacing of containers within the 325 HWTUs satisfies the following requirements. [WAC 173-303-630(5)(c)]

III.5.O.2.g.i The Permittees will comply with the requirements for waste stored in cells, storage cabinets and shelves, as documented in Addendum C, Section C.1.2;

III.5.O.2.g.ii The Permittees will ensure the physical arrangement and spacing of drums that are stored in the 325 HWTUs are stored in rows no more than two drums wide and with a separation of at least thirty (30) inches between rows of drums to ensure that all drums are readily accessible for movement and inspection. [WAC 173-303-630(5)(c), WAC 173-303-340(3)]

III.5.O.2.h The Permittees will remove any accumulated liquids from container storage areas in the 325 HWTUs, including individual secondary containment systems (spill pallets, portable booms, or other commercially available drum containment systems) that may be used to ensure containers are not in contact with free liquids and to prevent overflow of the container storage area secondary containment. [WAC 173-303-630(7)]

III.5.O.2.i The Permittees may treat wastes in containers via consolidation of wastes, decanting of free liquids and addition of absorbents. Absorbents must satisfy the requirements of WAC 173-303-140(4)(b)(iv), incorporated by reference, for wastes to be land disposed in Washington. The Permittees may not use addition of absorbents for purposes of changing the treatability group of a waste with respect to the land disposal restriction standards of 40 CFR 268, incorporated by reference by WAC 173-303-140.

III.5.O.2.j Waste stored in the SAL and the Cask Handling Area is exempt from WAC 173-303-692, as those units are used exclusively to manage mixed waste. The Permittees will comply with the requirements for air emissions from containers in Addendum C, Section C.3 for waste stored in the other portions of the 325 HWTUs. [WAC 173-303-692]

III.5.O.3 Container Storage Inspection Requirements

III.5.O.3.a The Permittee will inspect the 325 HWTUs according to Addendum I, Inspection Requirements. [WAC 173-303-630(6)]

III.5.O.3.b The Permittees will comply with the requirements of WAC 173-303-395(1)(d), incorporated by reference. [WAC 173-303-395(1)(d)]

III.5.P **TANK SYSTEMS**

III.5.P.1 The Permittees will develop, maintain, and follow a written schedule and requirements for conducting integrity assessments. The schedule will meet the requirements of Addendum C, Section C.2.1.1.2 and consideration of the following factors:

III.5.P.1.a Results of past integrity assessments;

III.5.P.1.b Age of the tank system(s);

III.5.P.1.c Materials of construction of each tank system, including any liners;

III.5.P.1.d Characteristics of the wastes managed by each tank system;

III.5.P.1.e Any other relevant factors. [WAC 173-303-640(2)(e)]

III.5.P.2 The Permittees will maintain a copy of the schedule required by Permit Condition III.5.P.1 in the Hanford Facility Operating Record, 325 HWTUs File, and conduct periodic integrity assessments according to the schedules and requirements of the schedule.

If results of these assessments indicate a tank has structural deficiencies or lacks integrity such that it may collapse, rupture or fail, the Permittees must follow the requirements of WAC 173-303-640(7), incorporated by reference. [WAC 173-303-640(2)(e)]

III.5.P.3 If the findings of an integrity assessment conducted pursuant to Permit Condition III.5.P.1 indicate a tank has structural deficiencies or lacks integrity such that it may collapse, rupture or fail, the Permittees will evaluate the waste acceptance criteria in Addendum B, the applicable tank design and/or operating requirements in Addendum C, and any other Permit requirements which may reasonably influence the integrity of the tank in question. Based on this review, the Permittees will request the required Permit modifications in accordance with Permit Conditions I.C.3 to minimize any adverse effects of future waste management activities on the integrity of the tank. [WAC 173-303-640(2)(d), WAC 173-303-815(2)(b)]

III.5.P.4 Tank System Operating Requirements

III.5.P.4.a The Permittees will comply with the requirements of WAC 173-303-640(5)(a), incorporated by reference.

III.5.P.4.b The Permittees will comply with the requirements of Addendum C, Section C.2.1.2.4. [WAC 173-303-640(5)(b)]

III.5.P.4.c The Permittees will comply with the requirements of Addendum C, Section C.2.1.4. [WAC 173-303-640(5)(d)]

III.5.P.4.d The Permittees will comply with the requirements of WAC 173-303-640(7), incorporated by reference, in response to spills or leaks from tank systems at Operating Unit Group 5. [WAC 173-303-640(5)(c)]

III.5.P.4.e The Permittees will comply with the requirements of WAC 173-303-640(10), incorporated by reference.

III.5.P.5 Tank System Inspection Requirement

III.5.P.5.a The Permittees will inspect the Operating Unit Group 5 tank systems authorized by Permit Condition III.5.B.2 according to Addendum I, Inspection Requirements. [WAC 173-303-640(6)(a)-(c)]

III.5.P.5.b The Permittees will place documentation of inspections conducted pursuant to Permit Condition III.3.P.5.a in the Hanford Facility Operating Record, 325 HWTUs File required by Permit Condition II.I.2. These records will contain the following information: [WAC 173-303-640(6)(d)]

III.5.P.5.b.i Date and time of the inspection

III.5.P.5.b.ii Printed name and the handwritten signature of the inspector

III.5.P.5.b.iii Notation of the observations made

III.5.P.5.b.iv Date and description of any repairs or remedial actions taken, and/or the scheduled date for the repairs or remedial actions.

III.5.P.5.c The Permittees will remedy any problems revealed by the inspections required by Permit Condition III.3.P.9, on a schedule that prevents hazards to the public health and environment. Where a hazard is imminent or has already occurred, remedial action must be taken immediately. [WAC 173-303-640(6)(d)]

III.5.P.6 Approved Waste and Storage Limits

III.5.P.6.a	Subject to conditions in Addendum C, the Permittees may store a maximum of 1,218 liters of dangerous and/or mixed waste in the tank system in the 325 HWTUs (S02). A maximum of 1,218 liters per day of dangerous and/or mixed waste may be treated in tanks in the 325 HWTUs (T01).
III.5.P.6.b	The Permittees shall only store or treat in the SAL tank the following mixed waste listed in the Dangerous and Mixed Waste Tank System:
III.5.P.6.b.i	Dangerous and/or mixed waste generated by Pacific Northwest National Laboratory; or
III.5.P.6.b.ii	Mixed waste generated at other Hanford Facility locations and mixed waste generated from offsite facilities, which have been transferred and accepted by the 325 HWTUs pursuant to the provisions in Addendum B, Waste Analysis Plan, and this Permit.
III.5.P.7	Tank System Design and Construction
III.5.P.7.a	Tank System Installation and Certification will be retained by the Permittees and made available upon request.
III.5.P.8	Integrity Assessments
III.5.P.8.a	Results of the integrity assessments shall be included in the Hanford Facility Operating Record, 325 HWTUs File until final closure and corrective action are complete and certified.
III.5.P.8.b	Any tank system, including its secondary containment system, found to be leaking, or otherwise unfit for service, immediately shall be removed from service and the Permittees shall comply with the requirements of WAC 173-303-640(7). Such a tank system, including its secondary containment system, shall not be returned to service until the Permittees have obtained the required certification.
III.5.P.8.c	The Permittees shall maintain the integrity of all containment systems for tank systems.
III.5.P.9	Tank Management Practices
III.5.P.9.a	The Permittees shall not place mixed wastes or treatment reagents in the tank system if these could cause the tank, its ancillary equipment, or a containment system to rupture, leak, corrode, or otherwise fail.

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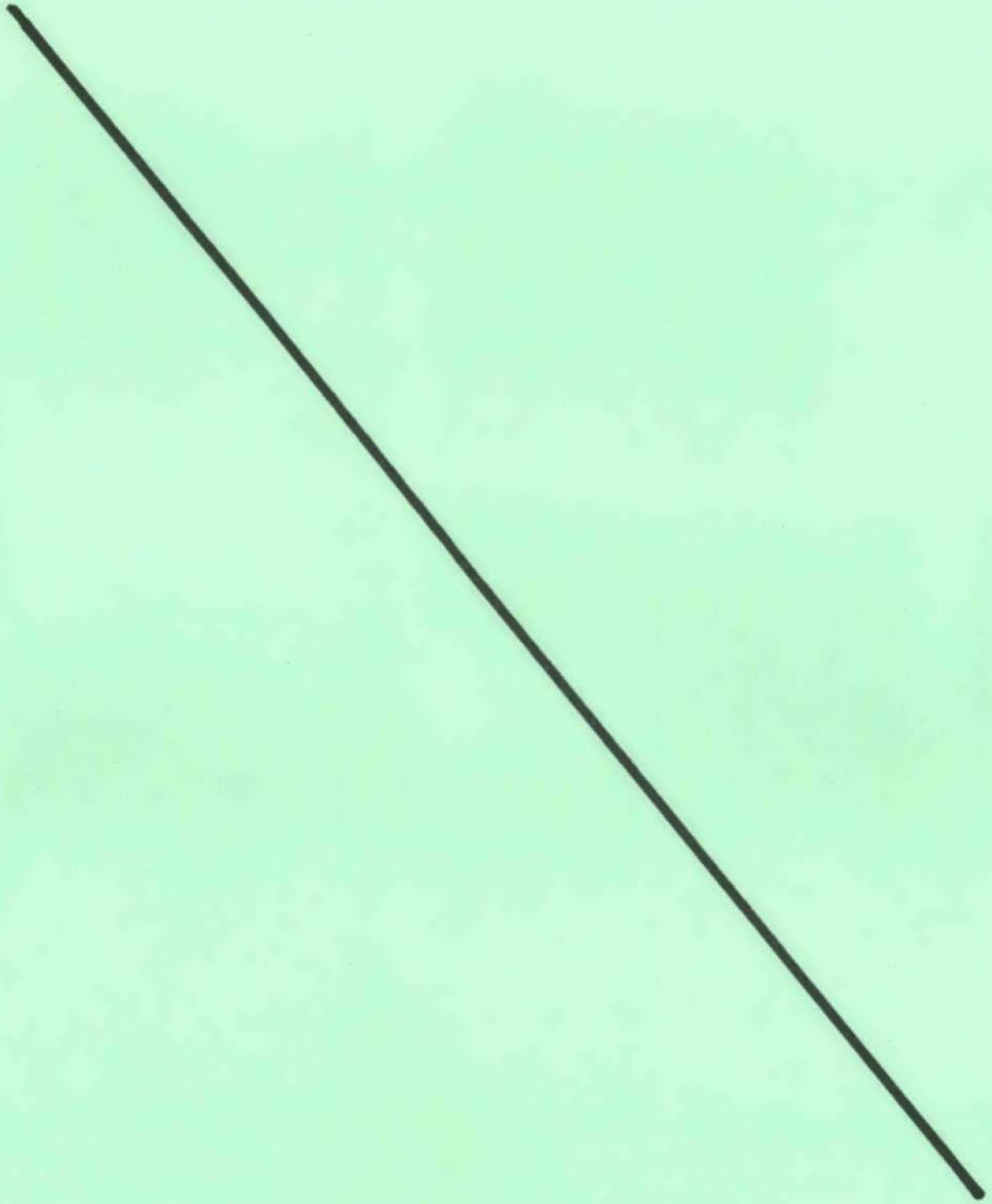

ADDENDUM A
PART A FORM

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WASHINGTON STATE DEPARTMENT OF ECOLOGY

Dangerous Waste Permit Application Part A Form

Date Received	Reviewed by: [signature] for Steve Szerdan	Date: 10 29 2008
Month Day Year	Approved by: G. P. Davis	Date: 10 29 2008
10 09 2008		

I. This form is submitted to: (place an "X" in the appropriate box)

- [X] Request modification to a final status permit (commonly called a "Part B" permit)
- [ ] Request a change under interim status
- [ ] Apply for a final status permit. This includes the application for the initial final status permit for a site or for a permit renewal (i.e., a new permit to replace an expiring permit).
- [ ] Establish interim status because of the wastes newly regulated on: (Date)

List waste codes:

II. EPA/State ID Number

W A 7 8 9 0 0 0 8 9 6 7

III. Name of Facility

US Department of Energy – Hanford Facility

IV. Facility Location (Physical address not P.O. Box or Route Number)

A. Street

825 Jadwin

City or Town	State	ZIP Code
Richland	WA	99352

County Code (if known)	County Name
0 0 5	Benton

B. Land Type	C. Geographic Location Latitude (degrees, mins, secs)	Longitude (degrees, mins, secs)	D. Facility Existence Date Month Day Year
F	Refer to TOPO Map (Section XV.)		0 3 22 1943

V. Facility Mailing Address

Street or P.O. Box

P.O. Box 550

City or Town	State	ZIP Code

Richland	WA	99352

VI. Facility contact (Person to be contacted regarding waste activities at facility)		
Name (last)	**(first)**	
Klein	Keith	
Job Title	**Phone Number (area code and number)**	
Manager	(509) 376-7395	
Contact Address		
Street or P.O. Box		
P.O. Box 550		
City or Town	**State**	**ZIP Code**
Richland	WA	99352

VII. Facility Operator Information		
A. Name	**Phone Number (area code and number)**	
Department of Energy Owner/Operator Pacific Northwest National Laboratory Co-Operator for 325 HWTUs*	(509) 376-7395 (509) 376-1187*	
Street or P.O. Box		
P.O. Box 550* P.O. Box 999		
City or Town	**State**	**ZIP Code**
Richland	WA	99352
B. Operator Type F		
C. Does the name in VII.A reflect a proposed change in operator? ☐ Yes ☒ No		
If yes, provide the scheduled date for the change:	**Month**	**Day** **Year**
D. Is the name listed in VII.A. also the owner? If yes, skip to Section VIII.C. ☐ Yes ☒ No		

VIII. Facility Owner Information		
A. Name	**Phone Number (area code and number)**	
Keith A. Klein, Operator/Facility-Property Owner	(509) 376-7395	
Street or P.O. Box		
P.O. Box 550		
City or Town	**State**	**ZIP Code**
Richland	WA	99352
B. Operator Type F		
C. Does the name in VII.A reflect a proposed change in operator? ☐ Yes ☒ No		
If yes, provide the scheduled date for the change:	**Month**	**Day** **Year**

IX. NAICS Codes (5/6 digit codes)	
A. First	**B. Second**

5	4	1	7	1		Research & Development in the Physical, Engineering, & Life Sciences								
C. Third							**D. Fourth**							

X. Other Environmental Permits (see instructions)

A. Permit Type	B. Permit Number	C. Description
E	AIR-02-1202	WAC 246-247, Non radioactive Air, 40 CFR 61, Subpart H, NESHAPS
E	DE98NWP-003	WAC 173-400, General Regulations for Air Pollution Sources, WAC 173-460, Controls for New Sources of Toxic Air Pollutants

XI. Nature of Business (provide a brief description that includes both dangerous waste and non-dangerous waste areas and activities)

The 325 Hazardous Waste Treatment Units (325 HWTUs) consist of the Shielded Analytical Laboratory (SAL), which includes Rooms 32, 200, 201, 202, and 203 of the 325 Building; and the Hazardous Waste Treatment Unit (HWTU) encompassing Rooms 520, 524, and 528 of the 325 Building. The 325 HWTUs began waste management operations in 1991 (SAL) and 1995 (HWTU). Up to 12, 000 liters of dangerous and/or mixed waste may be stored in the 325 HWTUs (S01). A maximum of 1514 liters of dangerous and/or mixed waste may be treated per day in containers in the 325 HWTUs (T04).

A maximum of 1,218 liters of dangerous and/or mixed waste may be stored in tanks in the 325 HWTUs (S02). A maximum of 1,218 liters per day of dangerous and/or mixed waste may be treated in tanks in the 325 HWTUs (T01).

Dangerous and/or mixed waste treatments are generally conducted as small bench-scale operations except for in-tank treatments. Treatment processes utilized at the 325 HWTUs may include any of the types of treatment described in WAC 173-303-380(2)(d), Table 2, Section 2 except for the following: incineration technologies (T06-T10), large-scale biological treatment (T68, T72, and T73), boiler and industrial furnace-based treatment (T80-T93), and treatment in containment buildings (T94).

Routine dangerous and/or mixed waste treatment that will be conducted in the 325 HWTUs will include pH adjustment, ion exchange, carbon absorption, oxidation, reduction, waste concentration by evaporation, precipitation, filtration, solvent extraction, solids washing, phase separation, catalytic destruction, and solidification/stabilization. These waste treatments will be conducted on small quantities of diverse radioactive, dangerous, and/or mixed wastes generated from ongoing research and development and analytical chemistry activities. Waste to be handled in the 325 HWTUs will include listed waste, waste from non-specific sources, characteristic waste, and state-only criteria waste. Multi-source leachate (F039) is included as a waste derived from non-specific source waste F001 through F005.

EXAMPLE FOR COMPLETING ITEMS XII and XIII (shown in lines numbered X-1, X-2, and X-3 below): A facility has two storage tanks that hold 1200 gallons and 400 gallons respectively. There is also treatment in tanks at 20 gallons/hr. Finally, a one-quarter acre area that is two meters deep will undergo *in situ vitrification.*

Section XII. Process Codes and Design Capacities								Section XIII. Other Process Codes								
Line Number		A. Process Codes (enter code)			B. Process Design Capacity 1. Amount	B. Process Design Capacity 2. Unit of Measure (enter code)	C. Process Total Number of Units	Line Number		A. Process Codes (enter code)			B Process Design Capacity 1. Amount	B Process Design Capacity 2. Unit of Measure (enter code)	C. Process Total Number of Units	D. Process Description
X	1	S	0	2	1,600	G	002	X	1	T	0	4	700	C	001	In situ vitrification
X	2	T	0	3	20	E	001									

X	3	T	0	4	700	C	001									
	1	S	0	1	12,000	L	001		1							
	2	S	0	2	1,218	L	001		2	T	0	4	1,514	V	1	Treatment in containers
	3	T	0	1	1,218	V	001		3							
	4								4							
	5								5							
	6								6							
	7								7							
	8								8							
	9								9							
1	0							1	0							
1	1							1	1							
1	2							1	2							
1	3							1	3							
1	4							1	4							
1	5							1	5							
1	6							1	6							
1	7							1	7							
1	8							1	8							
1	9							1	9							
2	0							2	0							
2	1							2	1							
2	2							2	2							
2	3							2	3							
2	4							2	4							
2	5							2	5							

1

XIV. Description of Dangerous Wastes

Example for completing this section: A facility will receive three non-listed wastes, then store and treat them on-site. Two wastes are corrosive only, with the facility receiving and storing the wastes in containers. There will be about 200 pounds per year of each of these two wastes, which will be neutralized in a tank. The other waste is corrosive and ignitable and will be neutralized then blended into hazardous waste fuel. There will be about 100 pounds per year of that waste, which will be received in bulk and put into tanks.

Line Number	A. Dangerous Waste No.	B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Processes (1) Process Codes	(2) Process Description [If a code is not entered in D (1)]
X 1	D 0 0 2	400	P	S 0 1 T 0 1	
X 2	D 0 0 1	100	P	S 0 2 T 0 1	
X 3	D 0 0 2				Included with above
1	D 0 0 1	82,500 [60,000 (S01); 22,500 (T04)]	K	S 0 1 T 0 4	Includes Debris
2	D 0 0 2		K	S 0 1 T 0 4	Includes Debris
3	D 0 0 3		K	S 0 1 T 0 4	Includes Debris
4	D 0 0 4		K	S 0 1 T 0 4	Includes Debris
5	D 0 0 5		K	S 0 1 T 0 4	Includes Debris
6	D 0 0 6		K	S 0 1 T 0 4	Includes Debris
7	D 0 0 7		K	S 0 1 T 0 4	Includes Debris
8	D 0 0 8		K	S 0 1 T 0 4	Includes Debris
9	D 0 0 9		K	S 0 1 T 0 4	Includes Debris
10	D 0 1 0		K	S 0 1 T 0 4	Includes Debris
11	D 0 1 1		K	S 0 1 T 0 4	Includes Debris
12	D 0 1 2		K	S 0 1 T 0 4	Includes Debris
13	D 0 1 3		K	S 0 1 T 0 4	Includes Debris
14	D 0 1 4		K	S 0 1 T 0 4	Includes Debris
15	D 0 1 5		K	S 0 1 T 0 4	Includes Debris
16	D 0 1 6		K	S 0 1 T 0 4	Includes Debris
17	D 0 1 7		K	S 0 1 T 0 4	Includes Debris
18	D 0 1 8		K	S 0 1 T 0 4	Includes Debris
19	D 0 1 9		K	S 0 1 T 0 4	Includes Debris
20	D 0 2 0		K	S 0 1 T 0 4	Includes Debris
21	D 0 2 1		K	S 0 1 T 0 4	Includes Debris
22	D 0 2 2		K	S 0 1 T 0 4	Includes Debris
23	D 0 2 3		K	S 0 1 T 0 4	Includes Debris
24	D 0 2 4		K	S 0 1 T 0 4	Includes Debris
25	D 0 2 5		K	S 0 1 T 0 4	Includes Debris

1

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No.	B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Process (1) Process Codes	D. Process (2) Process Description [If a code is not entered in D (1)]
26	D026		K	S01T04	Includes Debris
27	D027		K	S01T04	Includes Debris
28	D028		K	S01T04	Includes Debris
29	D029		K	S01T04	Includes Debris
30	D030		K	S01T04	Includes Debris
31	D031		K	S01T04	Includes Debris
32	D032		K	S01T04	Includes Debris
33	D033		K	S01T04	Includes Debris
34	D034		K	S01T04	Includes Debris
35	D035		K	S01T04	Includes Debris
36	D036		K	S01T04	Includes Debris
37	D037		K	S01T04	Includes Debris
38	D038		K	S01T04	Includes Debris
39	D039		K	S01T04	Includes Debris
40	D040		K	S01T04	Includes Debris
41	D041		K	S01T04	Includes Debris
42	D042		K	S01T04	Includes Debris
43	D043		K	S01T04	Includes Debris
44	F001		K	S01T04	Includes Debris
45	F002		K	S01T04	Includes Debris
46	F003		K	S01T04	Includes Debris
47	F004		K	S01T04	Includes Debris
48	F005		K	S01T04	Includes Debris
49	F027		K	S01T04	Includes Debris
50	F039		K	S01T04	Includes Debris
51	P001		K	S01T04	Includes Debris
52	P002		K	S01T04	Includes Debris
53	P003		K	S01T04	Includes Debris
54	P004		K	S01T04	Includes Debris
55	P005		K	S01T04	Includes Debris
56	P006		K	S01T04	Includes Debris
57	P007		K	S01T04	Includes Debris
58	P008		K	S01T04	Includes Debris
59	P009		K	S01T04	Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

60	P	0	1	0		K	S	0	1	T	0	4				Includes Debris
61	P	0	1	1		K	S	0	1	T	0	4				Includes Debris
62	P	0	1	2		K	S	0	1	T	0	4				Includes Debris
63	P	0	1	4		K	S	0	1	T	0	4				Includes Debris
64	P	0	1	5		K	S	0	1	T	0	4				Includes Debris
65	P	0	1	6		K	S	0	1	T	0	4				Includes Debris
66	P	0	1	7		K	S	0	1	T	0	4				Includes Debris
67	P	0	1	8		K	S	0	1	T	0	4				Includes Debris
68	P	0	2	0		K	S	0	1	T	0	4				Includes Debris
69	P	0	2	1		K	S	0	1	T	0	4				Includes Debris
70	P	0	2	2		K	S	0	1	T	0	4				Includes Debris
71	P	0	2	3		K	S	0	1	T	0	4				Includes Debris
72	P	0	2	4		K	S	0	1	T	0	4				Includes Debris
73	P	0	2	6		K	S	0	1	T	0	4				Includes Debris
74	P	0	2	7		K	S	0	1	T	0	4				Includes Debris
75	P	0	2	8		K	S	0	1	T	0	4				Includes Debris
76	P	0	2	9		K	S	0	1	T	0	4				Includes Debris
77	P	0	3	0		K	S	0	1	T	0	4				Includes Debris
78	P	0	3	1		K	S	0	1	T	0	4				Includes Debris
79	P	0	3	3		K	S	0	1	T	0	4				Includes Debris
80	P	0	3	4		K	S	0	1	T	0	4				Includes Debris
81	P	0	3	6		K	S	0	1	T	0	4				Includes Debris
82	P	0	3	7		K	S	0	1	T	0	4				Includes Debris
83	P	0	3	8		K	S	0	1	T	0	4				Includes Debris
84	P	0	3	9		K	S	0	1	T	0	4				Includes Debris
85	P	0	4	0		K	S	0	1	T	0	4				Includes Debris
86	P	0	4	1		K	S	0	1	T	0	4				Includes Debris
87	P	0	4	2		K	S	0	1	T	0	4				Includes Debris
88	P	0	4	3		K	S	0	1	T	0	4				Includes Debris
89	P	0	4	4		K	S	0	1	T	0	4				Includes Debris
90	P	0	4	5		K	S	0	1	T	0	4				Includes Debris
91	P	0	4	6		K	S	0	1	T	0	4				Includes Debris
92	P	0	4	7		K	S	0	1	T	0	4				Includes Debris
93	P	0	4	8		K	S	0	1	T	0	4				Includes Debris
94	P	0	4	9		K	S	0	1	T	0	4				Includes Debris
95	P	0	5	0		K	S	0	1	T	0	4				Includes Debris
96	P	0	5	1		K	S	0	1	T	0	4				Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

97	P	0	5	4		K	S	0	1	T	0	4				Includes Debris
98	P	0	5	6		K	S	0	1	T	0	4				Includes Debris
99	P	0	5	7		K	S	0	1	T	0	4				Includes Debris
100	P	0	5	8		K	S	0	1	T	0	4				Includes Debris
101	P	0	5	9		K	S	0	1	T	0	4				Includes Debris
102	P	0	6	0		K	S	0	1	T	0	4				Includes Debris
103	P	0	6	2		K	S	0	1	T	0	4				Includes Debris
104	P	0	6	3		K	S	0	1	T	0	4				Includes Debris
105	P	0	6	4		K	S	0	1	T	0	4				Includes Debris
106	P	0	6	5		K	S	0	1	T	0	4				Includes Debris
107	P	0	6	6		K	S	0	1	T	0	4				Includes Debris
108	P	0	6	7		K	S	0	1	T	0	4				Includes Debris
109	P	0	6	8		K	S	0	1	T	0	4				Includes Debris
110	P	0	6	9		K	S	0	1	T	0	4				Includes Debris
111	P	0	7	0		K	S	0	1	T	0	4				Includes Debris
112	P	0	7	1		K	S	0	1	T	0	4				Includes Debris
113	P	0	7	2		K	S	0	1	T	0	4				Includes Debris
114	P	0	7	3		K	S	0	1	T	0	4				Includes Debris
115	P	0	7	4		K	S	0	1	T	0	4				Includes Debris
116	P	0	7	5		K	S	0	1	T	0	4				Includes Debris
117	P	0	7	6		K	S	0	1	T	0	4				Includes Debris
118	P	0	7	7		K	S	0	1	T	0	4				Includes Debris
119	P	0	7	8		K	S	0	1	T	0	4				Includes Debris
120	P	0	8	1		K	S	0	1	T	0	4				Includes Debris
121	P	0	8	2		K	S	0	1	T	0	4				Includes Debris
122	P	0	8	4		K	S	0	1	T	0	4				Includes Debris
123	P	0	8	5		K	S	0	1	T	0	4				Includes Debris
124	P	0	8	7		K	S	0	1	T	0	4				Includes Debris
125	P	0	8	8		K	S	0	1	T	0	4				Includes Debris
126	P	0	8	9		K	S	0	1	T	0	4				Includes Debris
127	P	0	9	2		K	S	0	1	T	0	4				Includes Debris
128	P	0	9	3		K	S	0	1	T	0	4				Includes Debris
129	P	0	9	4		K	S	0	1	T	0	4				Includes Debris
130	P	0	9	5		K	S	0	1	T	0	4				Includes Debris
131	P	0	9	6		K	S	0	1	T	0	4				Includes Debris
132	P	0	9	7		K	S	0	1	T	0	4				Includes Debris
133	P	0	9	8		K	S	0	1	T	0	4				Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

134	P	0	9	9		K	S	0	1	T	0	4			Includes Debris
135	P	1	0	1		K	S	0	1	T	0	4			Includes Debris
136	P	1	0	2		K	S	0	1	T	0	4			Includes Debris
137	P	1	0	3		K	S	0	1	T	0	4			Includes Debris
138	P	1	0	4		K	S	0	1	T	0	4			Includes Debris
139	P	1	0	5		K	S	0	1	T	0	4			Includes Debris
140	P	1	0	6		K	S	0	1	T	0	4			Includes Debris
141	P	1	0	8		K	S	0	1	T	0	4			Includes Debris
142	P	1	0	9		K	S	0	1	T	0	4			Includes Debris
143	P	1	1	0		K	S	0	1	T	0	4			Includes Debris
144	P	1	1	1		K	S	0	1	T	0	4			Includes Debris
145	P	1	1	2		K	S	0	1	T	0	4			Includes Debris
146	P	1	1	3		K	S	0	1	T	0	4			Includes Debris
147	P	1	1	4		K	S	0	1	T	0	4			Includes Debris
148	P	1	1	5		K	S	0	1	T	0	4			Includes Debris
149	P	1	1	6		K	S	0	1	T	0	4			Includes Debris
150	P	1	1	8		K	S	0	1	T	0	4			Includes Debris
151	P	1	1`	9		K	S	0	1	T	0	4			Includes Debris
152	P	1	2	0		K	S	0	1	T	0	4			Includes Debris
153	P	1	2	1		K	S	0	1	T	0	4			Includes Debris
154	P	1	2	2		K	S	0	1	T	0	4			Includes Debris
155	P	1	2	3		K	S	0	1	T	0	4			Includes Debris
156	P	1	2	7		K	S	0	1	T	0	4			Includes Debris
157	P	1	2	8		K	S	0	1	T	0	4			Includes Debris
158	P	1	8	5		K	S	0	1	T	0	4			Includes Debris
159	P	1	8	8		K	S	0	1	T	0	4			Includes Debris
160	P	1	8	9		K	S	0	1	T	0	4			Includes Debris
161	P	1	9	0		K	S	0	1	T	0	4			Includes Debris
162	P	1	9	1		K	S	0	1	T	0	4			Includes Debris
163	P	1	9	2		K	S	0	1	T	0	4			Includes Debris
164	P	1	9	4		K	S	0	1	T	0	4			Includes Debris
165	P	1	9	6		K	S	0	1	T	0	4			Includes Debris
166	P	1	9	7		K	S	0	1	T	0	4			Includes Debris
167	P	1	9	8		K	S	0	1	T	0	4			Includes Debris
168	P	1	9	9		K	S	0	1	T	0	4			Includes Debris
169	P	2	0	1		K	S	0	1	T	0	4			Includes Debris
170	P	2	0	2		K	S	0	1	T	0	4			Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

171	P	2	0	3		K	S	0	1	T	0	4				Includes Debris
172	P	2	0	4		K	S	0	1	T	0	4				Includes Debris
173	P	2	0	5		K	S	0	1	T	0	4				Includes Debris
174	U	0	0	1		K	S	0	1	T	0	4				Includes Debris
175	U	0	0	2		K	S	0	1	T	0	4				Includes Debris
176	U	0	0	3		K	S	0	1	T	0	4				Includes Debris
177	U	0	0	4		K	S	0	1	T	0	4				Includes Debris
178	U	0	0	5		K	S	0	1	T	0	4				Includes Debris
179	U	0	0	6		K	S	0	1	T	0	4				Includes Debris
180	U	0	0	7		K	S	0	1	T	0	4				Includes Debris
181	U	0	0	8		K	S	0	1	T	0	4				Includes Debris
182	U	0	0	9		K	S	0	1	T	0	4				Includes Debris
183	U	0	1	0		K	S	0	1	T	0	4				Includes Debris
184	U	0	1	1		K	S	0	1	T	0	4				Includes Debris
185	U	0	1	2		K	S	0	1	T	0	4				Includes Debris
186	U	0	1	4		K	S	0	1	T	0	4				Includes Debris
187	U	0	1	5		K	S	0	1	T	0	4				Includes Debris
188	U	0	1	6		K	S	0	1	T	0	4				Includes Debris
189	U	0	1	7		K	S	0	1	T	0	4				Includes Debris
190	U	0	1	8		K	S	0	1	T	0	4				Includes Debris
191	U	0	1	9		K	S	0	1	T	0	4				Includes Debris
192	U	0	2	0		K	S	0	1	T	0	4				Includes Debris
193	U	0	2	1		K	S	0	1	T	0	4				Includes Debris
194	U	0	2	2		K	S	0	1	T	0	4				Includes Debris
195	U	0	2	3		K	S	0	1	T	0	4				Includes Debris
196	U	0	2	4		K	S	0	1	T	0	4				Includes Debris
197	U	0	2	5		K	S	0	1	T	0	4				Includes Debris
198	U	0	2	6		K	S	0	1	T	0	4				Includes Debris
199	U	0	2	7		K	S	0	1	T	0	4				Includes Debris
200	U	0	2	8		K	S	0	1	T	0	4				Includes Debris
201	U	0	2	9		K	S	0	1	T	0	4				Includes Debris
202	U	0	3	0		K	S	0	1	T	0	4				Includes Debris
203	U	0	3	1		K	S	0	1	T	0	4				Includes Debris
204	U	0	3	2		K	S	0	1	T	0	4				Includes Debris
205	U	0	3	3		K	S	0	1	T	0	4				Includes Debris
206	U	0	3	4		K	S	0	1	T	0	4				Includes Debris
207	U	0	3	5		K	S	0	1	T	0	4				Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

208	U	0	3	6		K	S	0	1	T	0	4			Includes Debris
209	U	0	3	7		K	S	0	1	T	0	4			Includes Debris
210	U	0	3	8		K	S	0	1	T	0	4			Includes Debris
211	U	0	3	9		K	S	0	1	T	0	4			Includes Debris
212	U	0	4	1		K	S	0	1	T	0	4			Includes Debris
213	U	0	4	2		K	S	0	1	T	0	4			Includes Debris
214	U	0	4	3		K	S	0	1	T	0	4			Includes Debris
215	U	0	4	4		K	S	0	1	T	0	4			Includes Debris
216	U	0	4	5		K	S	0	1	T	0	4			Includes Debris
217	U	0	4	6		K	S	0	1	T	0	4			Includes Debris
218	U	0	4	7		K	S	0	1	T	0	4			Includes Debris
219	U	0	4	8		K	S	0	1	T	0	4			Includes Debris
220	U	0	4	9		K	S	0	1	T	0	4			Includes Debris
221	U	0	5	0		K	S	0	1	T	0	4			Includes Debris
222	U	0	5	1		K	S	0	1	T	0	4			Includes Debris
223	U	0	5	2		K	S	0	1	T	0	4			Includes Debris
224	U	0	5	3		K	S	0	1	T	0	4			Includes Debris
225	U	0	5	5		K	S	0	1	T	0	4			Includes Debris
226	U	0	5	6		K	S	0	1	T	0	4			Includes Debris
227	U	0	5	7		K	S	0	1	T	0	4			Includes Debris
228	U	0	5	8		K	S	0	1	T	0	4			Includes Debris
229	U	0	5	9		K	S	0	1	T	0	4			Includes Debris
230	U	0	6	0		K	S	0	1	T	0	4			Includes Debris
231	U	0	6	1		K	S	0	1	T	0	4			Includes Debris
232	U	0	6	2		K	S	0	1	T	0	4			Includes Debris
233	U	0	6	3		K	S	0	1	T	0	4			Includes Debris
234	U	0	6	4		K	S	0	1	T	0	4			Includes Debris
235	U	0	6	6		K	S	0	1	T	0	4			Includes Debris
236	U	0	6	7		K	S	0	1	T	0	4			Includes Debris
237	U	0	6	8		K	S	0	1	T	0	4			Includes Debris
238	U	0	6	9		K	S	0	1	T	0	4			Includes Debris
239	U	0	7	0		K	S	0	1	T	0	4			Includes Debris
240	U	0	7	1		K	S	0	1	T	0	4			Includes Debris
241	U	0	7	2		K	S	0	1	T	0	4			Includes Debris
242	U	0	7	3		K	S	0	1	T	0	4			Includes Debris
243	U	0	7	4		K	S	0	1	T	0	4			Includes Debris
244	U	0	7	6		K	S	0	1	T	0	4			Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

245	U	0	7	7		K	S	0	1	T	0	4				Includes Debris
246	U	0	7	8		K	S	0	1	T	0	4				Includes Debris
247	U	0	7	9		K	S	0	1	T	0	4				Includes Debris
248	U	0	8	0		K	S	0	1	T	0	4				Includes Debris
249	U	0	8	1		K	S	0	1	T	0	4				Includes Debris
250	U	0	8	2		K	S	0	1	T	0	4				Includes Debris
251	U	0	8	3		K	S	0	1	T	0	4				Includes Debris
252	U	0	8	4		K	S	0	1	T	0	4				Includes Debris
253	U	0	8	5		K	S	0	1	T	0	4				Includes Debris
254	U	0	8	6		K	S	0	1	T	0	4				Includes Debris
255	U	0	8	7		K	S	0	1	T	0	4				Includes Debris
256	U	0	8	8		K	S	0	1	T	0	4				Includes Debris
257	U	0	8	9		K	S	0	1	T	0	4				Includes Debris
258	U	0	9	0		K	S	0	1	T	0	4				Includes Debris
259	U	0	9	1		K	S	0	1	T	0	4				Includes Debris
260	U	0	9	2		K	S	0	1	T	0	4				Includes Debris
261	U	0	9	3		K	S	0	1	T	0	4				Includes Debris
262	U	0	9	4		K	S	0	1	T	0	4				Includes Debris
263	U	0	9	5		K	S	0	1	T	0	4				Includes Debris
264	U	0	9	6		K	S	0	1	T	0	4				Includes Debris
265	U	0	9	7		K	S	0	1	T	0	4				Includes Debris
266	U	0	9	8		K	S	0	1	T	0	4				Includes Debris
267	U	0	9	9		K	S	0	1	T	0	4				Includes Debris
268	U	1	0	1		K	S	0	1	T	0	4				Includes Debris
269	U	1	0	2		K	S	0	1	T	0	4				Includes Debris
270	U	1	0	3		K	S	0	1	T	0	4				Includes Debris
271	U	1	0	5		K	S	0	1	T	0	4				Includes Debris
272	U	1	0	6		K	S	0	1	T	0	4				Includes Debris
273	U	1	0	7		K	S	0	1	T	0	4				Includes Debris
274	U	1	0	8		K	S	0	1	T	0	4				Includes Debris
275	U	1	0	9		K	S	0	1	T	0	4				Includes Debris
276	U	1	1	0		K	S	0	1	T	0	4				Includes Debris
277	U	1	1	1		K	S	0	1	T	0	4				Includes Debris
278	U	1	1	2		K	S	0	1	T	0	4				Includes Debris
279	U	1	1	3		K	S	0	1	T	0	4				Includes Debris
280	U	1	1	4		K	S	0	1	T	0	4				Includes Debris
281	U	1	1	5		K	S	0	1	T	0	4				Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

282	U	1	1	6		K	S	0	1	T	0	4			Includes Debris
283	U	1	1	7		K	S	0	1	T	0	4			Includes Debris
284	U	1	1	8		K	S	0	1	T	0	4			Includes Debris
285	U	1	1	9		K	S	0	1	T	0	4			Includes Debris
286	U	1	2	0		K	S	0	1	T	0	4			Includes Debris
287	U	1	2	1		K	S	0	1	T	0	4			Includes Debris
288	U	1	2	2		K	S	0	1	T	0	4			Includes Debris
289	U	1	2	3		K	S	0	1	T	0	4			Includes Debris
290	U	1	2	4		K	S	0	1	T	0	4			Includes Debris
291	U	1	2	5		K	S	0	1	T	0	4			Includes Debris
292	U	1	2	6		K	S	0	1	T	0	4			Includes Debris
293	U	1	2	7		K	S	0	1	T	0	4			Includes Debris
294	U	1	2	8		K	S	0	1	T	0	4			Includes Debris
295	U	1	2	9		K	S	0	1	T	0	4			Includes Debris
296	U	1	3	0		K	S	0	1	T	0	4			Includes Debris
297	U	1	3	1		K	S	0	1	T	0	4			Includes Debris
298	U	1	3	2		K	S	0	1	T	0	4			Includes Debris
299	U	1	3	3		K	S	0	1	T	0	4			Includes Debris
300	U	1	3	4		K	S	0	1	T	0	4			Includes Debris
301	U	1	3	5		K	S	0	1	T	0	4			Includes Debris
302	U	1	3	6		K	S	0	1	T	0	4			Includes Debris
303	U	1	3	7		K	S	0	1	T	0	4			Includes Debris
304	U	1	3	8		K	S	0	1	T	0	4			Includes Debris
305	U	1	4	0		K	S	0	1	T	0	4			Includes Debris
306	U	1	4	1		K	S	0	1	T	0	4			Includes Debris
307	U	1	4	2		K	S	0	1	T	0	4			Includes Debris
308	U	1	4	3		K	S	0	1	T	0	4			Includes Debris
309	U	1	4	4		K	S	0	1	T	0	4			Includes Debris
310	U	1	4	5		K	S	0	1	T	0	4			Includes Debris
311	U	1	4	6		K	S	0	1	T	0	4			Includes Debris
312	U	1	4	7		K	S	0	1	T	0	4			Includes Debris
313	U	1	4	8		K	S	0	1	T	0	4			Includes Debris
314	U	1	4	9		K	S	0	1	T	0	4			Includes Debris
315	U	1	5	0		K	S	0	1	T	0	4			Includes Debris
316	U	1	5	1		K	S	0	1	T	0	4			Includes Debris
317	U	1	5	2		K	S	0	1	T	0	4			Includes Debris
318	U	1	5	3		K	S	0	1	T	0	4			Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

319	U	1	5	4		K	S	0	1	T	0	4				Includes Debris
320	U	1	5	5		K	S	0	1	T	0	4				Includes Debris
321	U	1	5	6		K	S	0	1	T	0	4				Includes Debris
322	U	1	5	7		K	S	0	1	T	0	4				Includes Debris
323	U	1	5	8		K	S	0	1	T	0	4				Includes Debris
324	U	1	5	9		K	S	0	1	T	0	4				Includes Debris
325	U	1	6	0		K	S	0	1	T	0	4				Includes Debris
326	U	1	6	1		K	S	0	1	T	0	4				Includes Debris
327	U	1	6	2		K	S	0	1	T	0	4				Includes Debris
328	U	1	6	3		K	S	0	1	T	0	4				Includes Debris
329	U	1	6	4		K	S	0	1	T	0	4				Includes Debris
330	U	1	6	5		K	S	0	1	T	0	4				Includes Debris
331	U	1	6	6		K	S	0	1	T	0	4				Includes Debris
332	U	1	6	7		K	S	0	1	T	0	4				Includes Debris
333	U	1	6	8		K	S	0	1	T	0	4				Includes Debris
334	U	1	6	9		K	S	0	1	T	0	4				Includes Debris
335	U	1	7	0		K	S	0	1	T	0	4				Includes Debris
336	U	1	7	1		K	S	0	1	T	0	4				Includes Debris
337	U	1	7	2		K	S	0	1	T	0	4				Includes Debris
338	U	1	7	3		K	S	0	1	T	0	4				Includes Debris
339	U	1	7	4		K	S	0	1	T	0	4				Includes Debris
340	U	1	7	6		K	S	0	1	T	0	4				Includes Debris
341	U	1	7	7		K	S	0	1	T	0	4				Includes Debris
342	U	1	7	8		K	S	0	1	T	0	4				Includes Debris
343	U	1	7	9		K	S	0	1	T	0	4				Includes Debris
344	U	1	8	0		K	S	0	1	T	0	4				Includes Debris
345	U	1	8	1		K	S	0	1	T	0	4				Includes Debris
346	U	1	8	2		K	S	0	1	T	0	4				Includes Debris
347	U	1	8	3		K	S	0	1	T	0	4				Includes Debris
348	U	1	8	4		K	S	0	1	T	0	4				Includes Debris
349	U	1	8	5		K	S	0	1	T	0	4				Includes Debris
350	U	1	8	6		K	S	0	1	T	0	4				Includes Debris
351	U	1	8	7		K	S	0	1	T	0	4				Includes Debris
352	U	1	8	8		K	S	0	1	T	0	4				Includes Debris
353	U	1	8	9		K	S	0	1	T	0	4				Includes Debris
354	U	1	9	0		K	S	0	1	T	0	4				Includes Debris
355	U	1	9	1		K	S	0	1	T	0	4				Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

356	U	1	9	2		K	S	0	1	T	0	4			Includes Debris
357	U	1	9	3		K	S	0	1	T	0	4			Includes Debris
358	U	1	9	4		K	S	0	1	T	0	4			Includes Debris
359	U	1	9	6		K	S	0	1	T	0	4			Includes Debris
360	U	1	9	7		K	S	0	1	T	0	4			Includes Debris
361	U	2	0	0		K	S	0	1	T	0	4			Includes Debris
362	U	2	0	1		K	S	0	1	T	0	4			Includes Debris
363	U	2	0	2		K	S	0	1	T	0	4			Includes Debris
364	U	2	0	3		K	S	0	1	T	0	4			Includes Debris
365	U	2	0	4		K	S	0	1	T	0	4			Includes Debris
366	U	2	0	5		K	S	0	1	T	0	4			Includes Debris
367	U	2	0	6		K	S	0	1	T	0	4			Includes Debris
368	U	2	0	7		K	S	0	1	T	0	4			Includes Debris
369	U	2	0	8		K	S	0	1	T	0	4			Includes Debris
370	U	2	0	9		K	S	0	1	T	0	4			Includes Debris
371	U	2	1	0		K	S	0	1	T	0	4			Includes Debris
372	U	2	1	1		K	S	0	1	T	0	4			Includes Debris
373	U	2	1	3		K	S	0	1	T	0	4			Includes Debris
374	U	2	1	4		K	S	0	1	T	0	4			Includes Debris
375	U	2	1	5		K	S	0	1	T	0	4			Includes Debris
376	U	2	1	6		K	S	0	1	T	0	4			Includes Debris
377	U	2	1	7		K	S	0	1	T	0	4			Includes Debris
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384	U	2	2	5		K	S	0	1	T	0	4			Includes Debris
385	U	2	2	6		K	S	0	1	T	0	4			Includes Debris
386	U	2	2	7		K	S	0	1	T	0	4			Includes Debris
387	U	2	2	8		K	S	0	1	T	0	4			Includes Debris
388	U	2	3	4		K	S	0	1	T	0	4			Includes Debris
389	U	2	3	5		K	S	0	1	T	0	4			Includes Debris
390	U	2	3	6		K	S	0	1	T	0	4			Includes Debris
391	U	2	3	7		K	S	0	1	T	0	4			Includes Debris
392	U	2	3	8		K	S	0	1	T	0	4			Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

393	U	2	3	9		K	S	0	1	T	0	4				Includes Debris
394	U	2	4	0		K	S	0	1	T	0	4				Includes Debris
395	U	2	4	3		K	S	0	1	T	0	4				Includes Debris
396	U	2	4	4		K	S	0	1	T	0	4				Includes Debris
397	U	2	4	6		K	S	0	1	T	0	4				Includes Debris
398	U	2	4	7		K	S	0	1	T	0	4				Includes Debris
399	U	2	4	8		K	S	0	1	T	0	4				Includes Debris
400	U	2	4	9		K	S	0	1	T	0	4				Includes Debris
401	U	2	7	1		K	S	0	1	T	0	4				Includes Debris
402	U	2	7	8		K	S	0	1	T	0	4				Includes Debris
403	U	2	7	9		K	S	0	1	T	0	4				Includes Debris
404	U	2	8	0		K	S	0	1	T	0	4				Includes Debris
405	U	3	2	8		K	S	0	1	T	0	4				Includes Debris
406	U	3	5	3		K	S	0	1	T	0	4				Includes Debris
407	U	3	5	9		K	S	0	1	T	0	4				Includes Debris
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418	U	4	1	0		K	S	0	1	T	0	4				Includes Debris
419	U	4	1	1		K	S	0	1	T	0	4				Includes Debris
420	W	P	C	B		K	S	0	1	T	0	4				Includes Debris
421	W	P	0	1		K	S	0	1	T	0	4				Includes Debris
422	W	P	0	2		K	S	0	1	T	0	4				Includes Debris
423	W	P	0	3		K	S	0	1	T	0	4				Includes Debris
424	W	T	0	1		K	S	0	1	T	0	4				Includes Debris
425	W	T	0	2		K	S	0	1	T	0	4				Includes Debris
426	W	S	C	2		K	S	0	1	T	0	4				Includes Debris
427	D	0	0	1	10,000	K	S	0	2	T	0	1				
428	D	0	0	2		K	S	0	2	T	0	1				
429	D	0	0	3		K	S	0	2	T	0	1				

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

430	D	0	0	4		K	S	0	2	T	0	1				
431	D	0	0	5		K	S	0	2	T	0	1				
432	D	0	0	6		K	S	0	2	T	0	1				
433	D	0	0	7		K	S	0	2	T	0	1				
434	D	0	0	8		K	S	0	2	T	0	1				
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436	D	0	1	0		K	S	0	2	T	0	1				
437	D	0	1	1		K	S	0	2	T	0	1				
438	D	0	1	8		K	S	0	2	T	0	1				
439	D	0	1	9		K	S	0	2	T	0	1				
440	D	0	2	2		K	S	0	2	T	0	1				
441	D	0	2	8		K	S	0	2	T	0	1				
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444	D	0	3	3		K	S	0	2	T	0	1				
445	D	0	3	4		K	S	0	2	T	0	1				
446	D	0	3	5		K	S	0	2	T	0	1				
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449	D	0	3	9		K	S	0	2	T	0	1				
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452	D	0	4	3		K	S	0	2	T	0	1				
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454	F	0	0	2		K	S	0	2	T	0	1				
455	F	0	0	3		K	S	0	2	T	0	1				
456	F	0	0	4		K	S	0	2	T	0	1				
457	F	0	0	5		K	S	0	2	T	0	1				
458	F	0	3	9		K	S	0	2	T	0	1				
459	W	T	0	1		K	S	0	2	T	0	1				
460	W	T	0	2		K	S	0	2	T	0	1				
461	W	P	0	1		K	S	0	2	T	0	1				
462	W	P	0	2		K	S	0	2	T	0	1				
463	W	S	C	2		K	S	0	2	T	0	1				
464																
465																
466																

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

XV. Map

Attach to this application a topographic map of the area extending to at least one (1) mile beyond property boundaries. The map must show the outline of the facility; the location of each of its existing and proposed intake and discharge structures; each of its dangerous waste treatment, storage, recycling, or disposal units; and each well where fluids are injected underground. Include all springs, rivers, and other surface water bodies in this map area, plus drinking water wells listed in public records or otherwise known to the applicant within ¼ mile of the facility property boundary. The instructions provide additional information on meeting these requirements.

XVI. Facility Drawing

All existing facilities must include a scale drawing of the facility (refer to instructions for more detail).

XVII. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, recycling, and disposal areas; and sites of future storage, treatment, recycling, or disposal areas (refer to instructions for more detail).

1

XVIII. Certifications

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

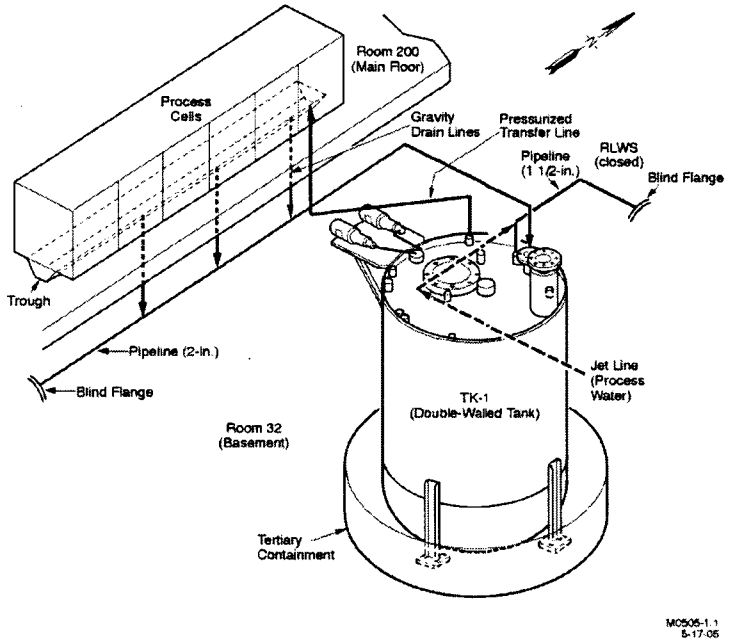
Operator* Name and Official Title (type or print) Keith A. Klein, Manager U.S. Department of Energy Richland Operations Office	**Signature**	**Date Signed** 7/11/05
Co-Operator Name and Official Title (type or print) Roby D. Enge, Director Environment, Safety, Health and Quality Pacific Northwest National Laboratory	**Signature**	**Date Signed** 5/20/05
Co-Operator – Address and Telephone Number 3350 George Washington Way P.O. Box 999 Richland, WA 99352 (509) 376-1187		
Facility-Property Owner* Name and Official Title (type or print) Keith A. Klein, Manager U.S. Department of Energy Richland Operations Office	**Signature**	**Date Signed** 7/11/05

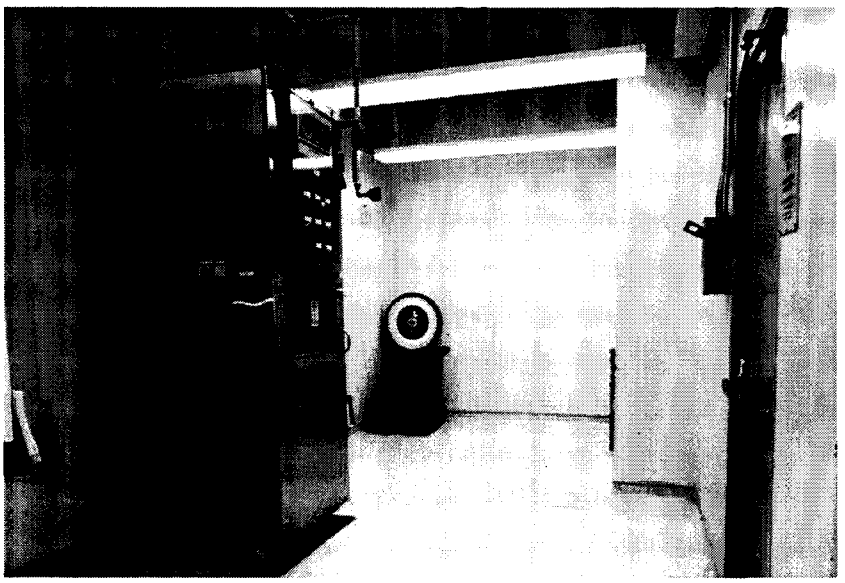
2

Comments

325 Hazardous Waste Treatment Units

Shielded Analytical Laboratory Tank and Ancillary Piping

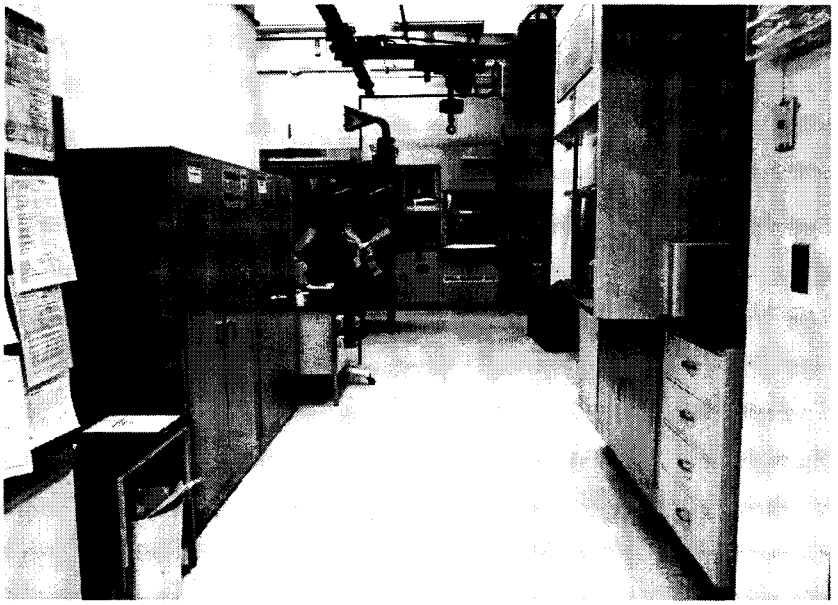




Room 528

96010398-22CN
(Photo Taken 1996)

325 Hazardous Waste Treatment Units



Room 528

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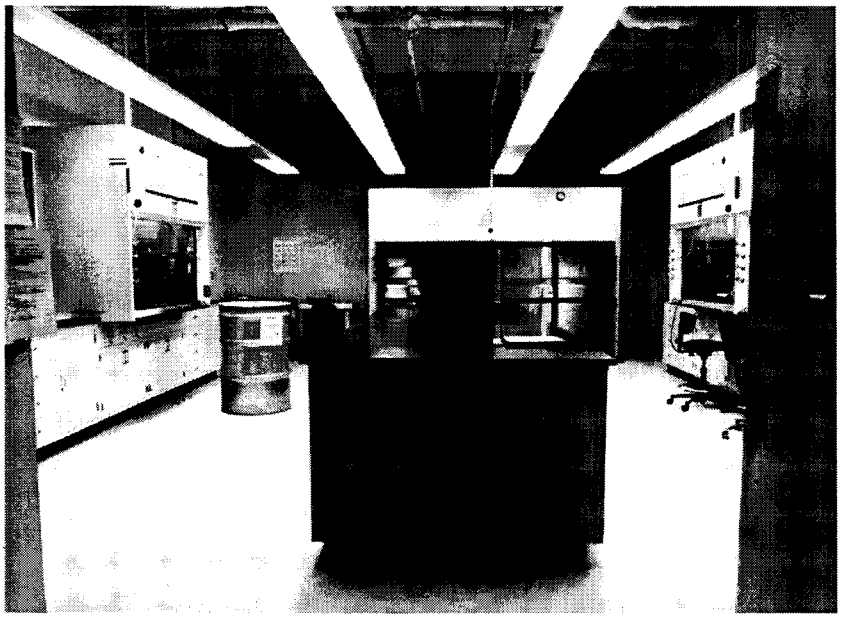


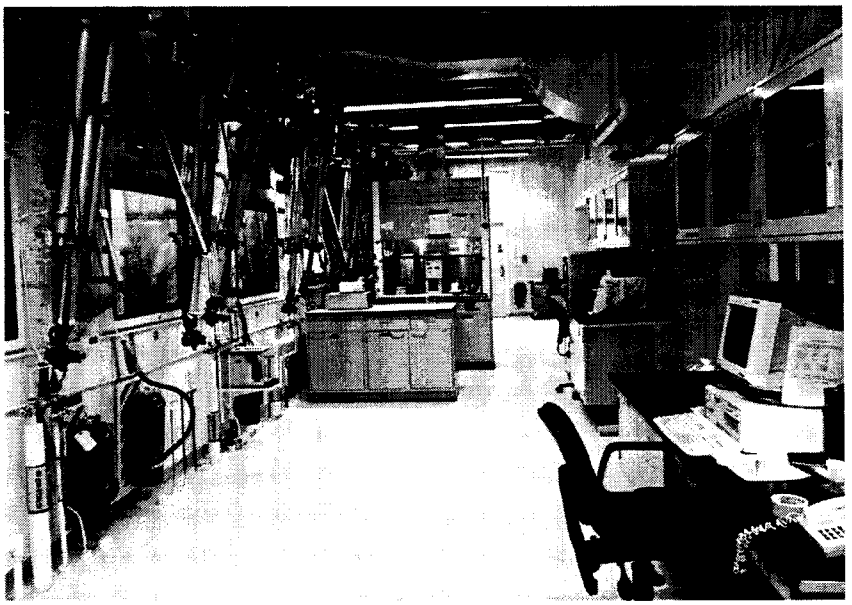
Room 520

96010398-17CN
(Photo Taken 1996)

325 Hazardous Waste Treatment Units

Room 201

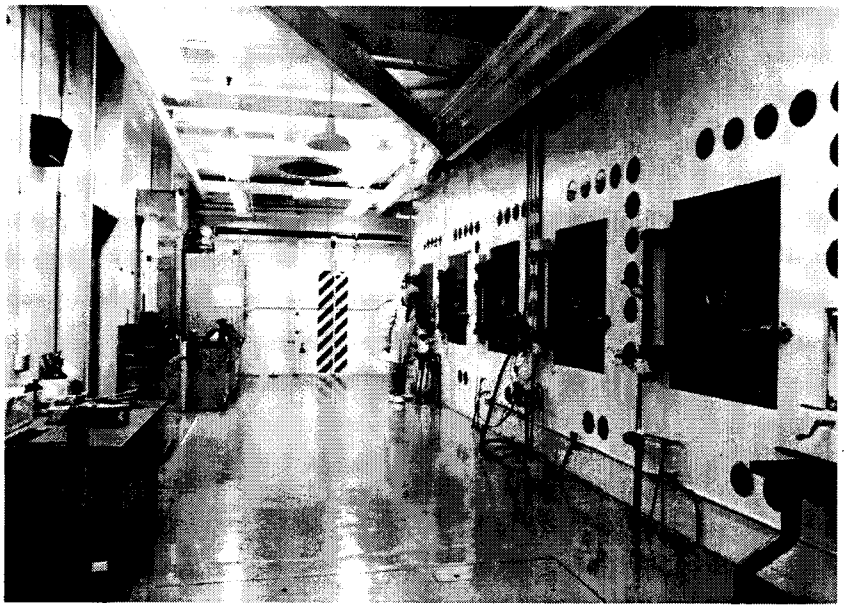
96010398-16CN
(Photo Taken 1996)



Room 201

96010398-7CN
(Photo Taken 1996)

Shielded Analytical Laboratory



Room 200

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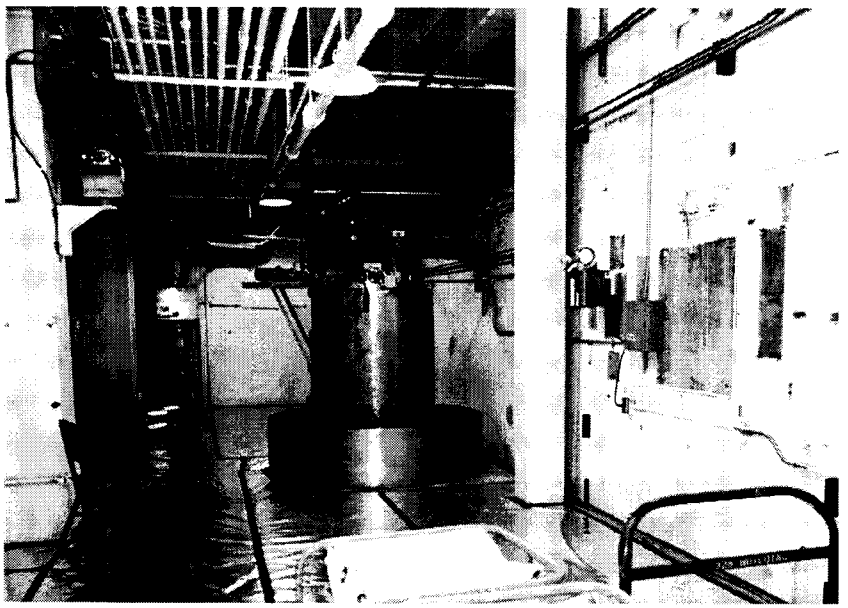
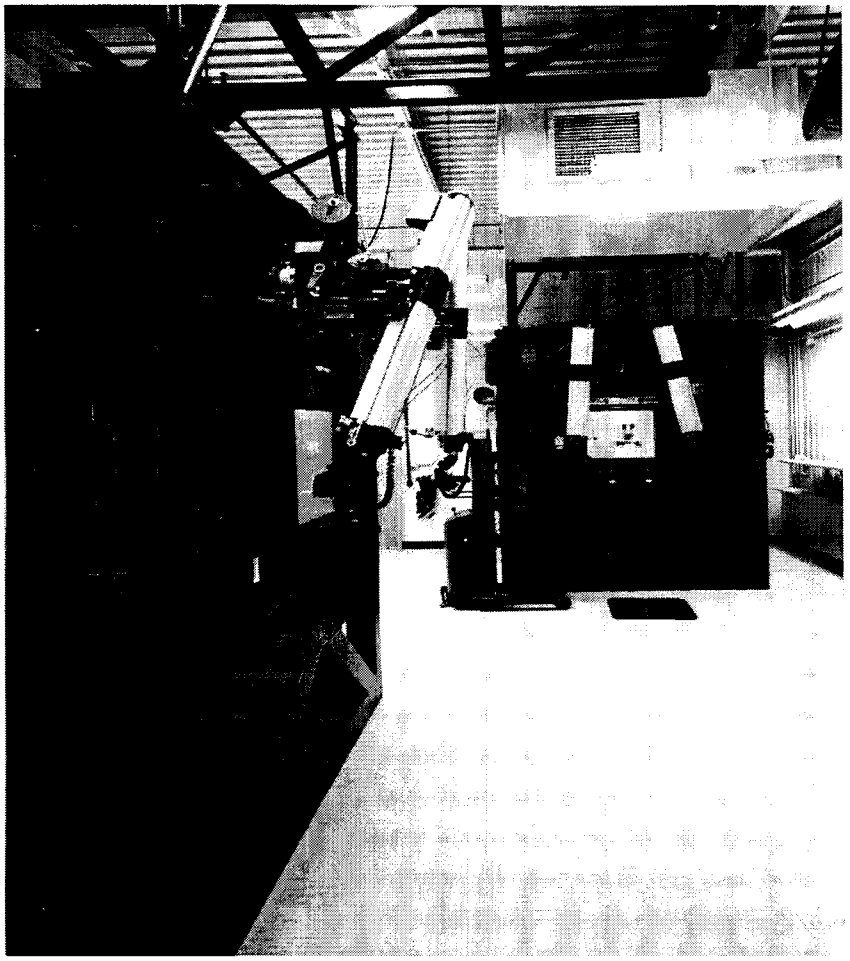


SAL Tank (Room 32)

96010398-3CN
(Photo Taken 1996)

Shielded Analytical Laboratory

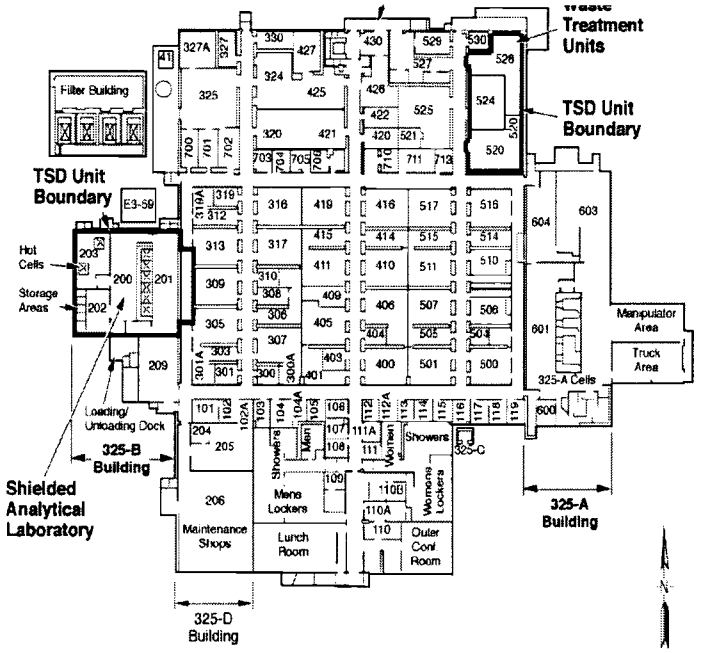


Room 203

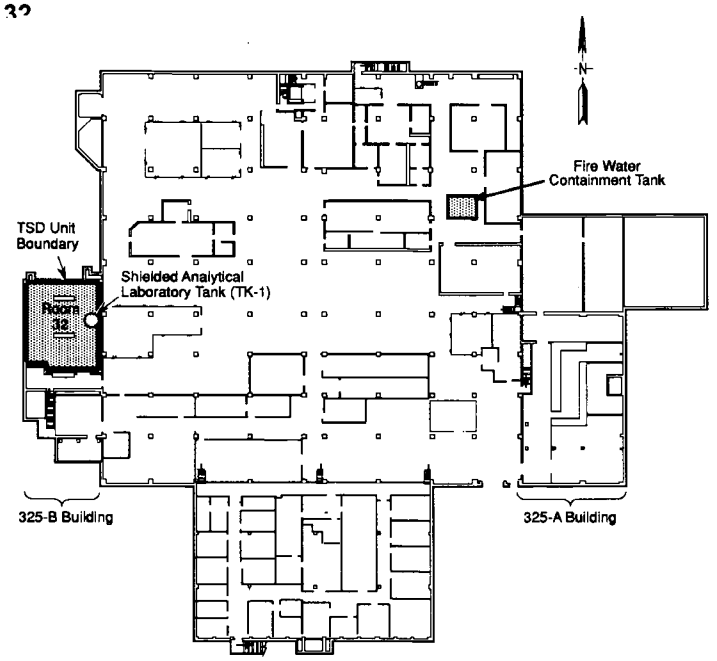
7908247-1CN
(Photo Taken 1979)

325 Hazardous Waste Treatment Units

Location of the Hazardous Waste Treatment Unit and Shielded Analytical Laboratory (main floor)



Location of Shielded Analytical Laboratory Tank in Room 32



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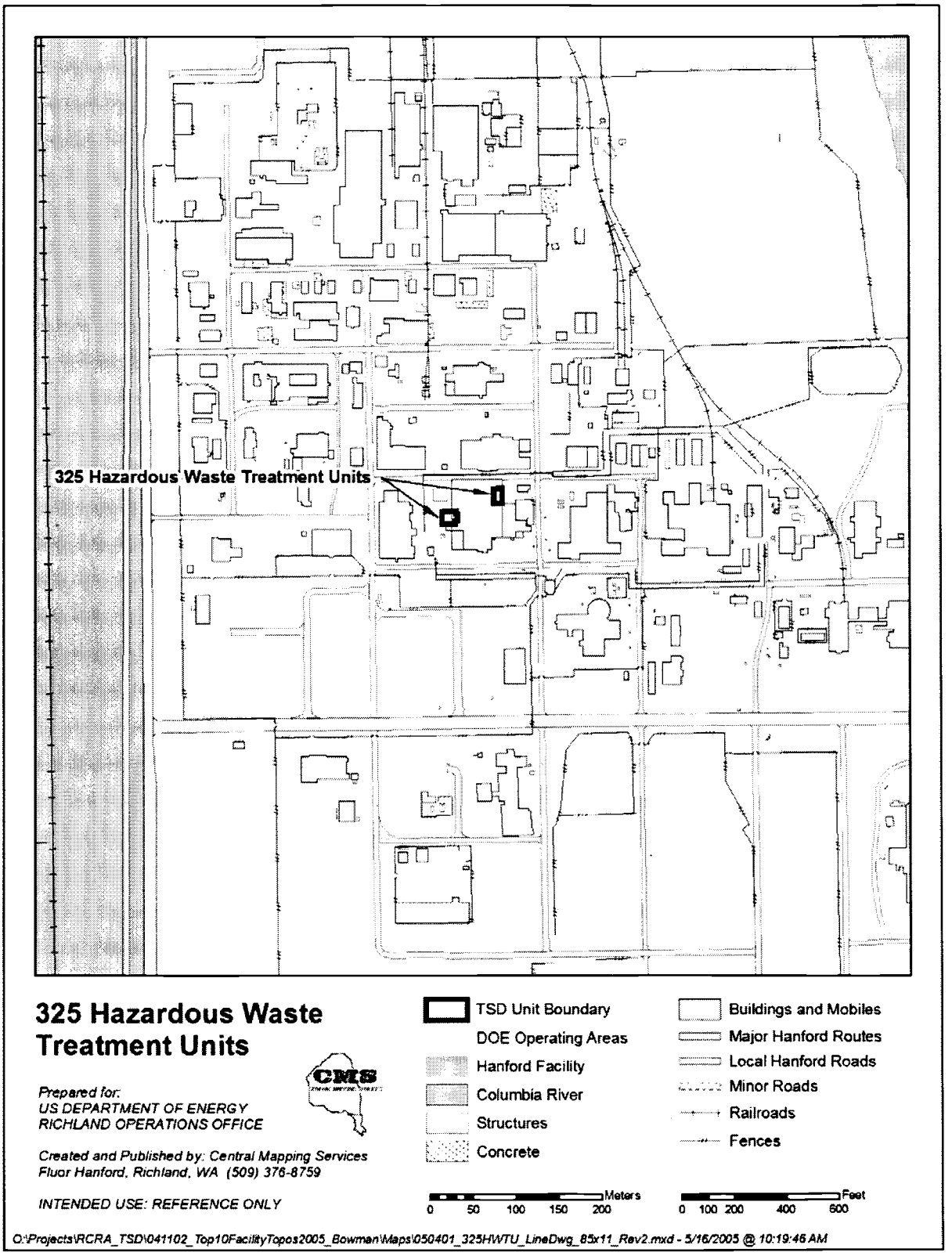
325 Hazardous Waste Treatment Units
325 Hazardous Waste Treatment Units
Prepared for:
US DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
CMS
Created and Published by: Central Mapping Services
Fluor Hanford, Richland, WA (509) 376-8759
INTENDED USE: REFERENCE ONLY
TSD Unit Boundary
DOE Operating Areas
Hanford Facility
Columbia River
Structures
Concrete
Buildings and Mobiles
Major Hanford Routes
Local Hanford Roads
Minor Roads
Railroads
Fences
Meters
0 50 100 150 200
Feet
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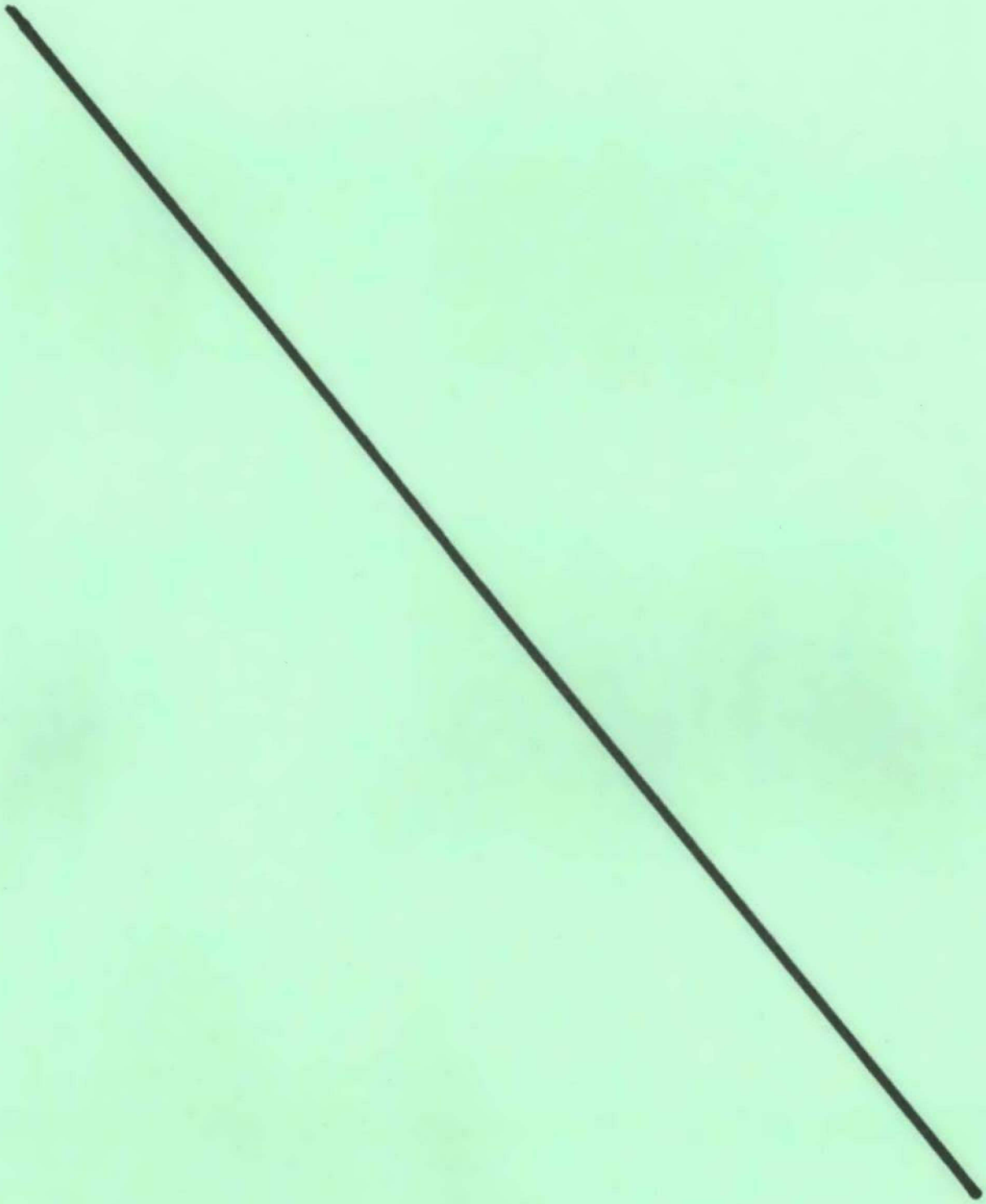

ADDENDUM B
WASTE ANALYSIS PLAN

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ADDENDUM B
WASTE ANALYSIS PLAN

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ADDENDUM B
WASTE ANALYSIS PLAN

EXECUTIVE SUMMARY

The 325 Hazardous Waste Treatment Units (325 HWTUs) collect, consolidate, and prepare dangerous waste for shipment. Waste is primarily received from onsite generators and offsite Pacific Northwest National Laboratory (PNNL) facilities. The purpose of this Waste Analysis Plan (WAP) is to document the process to confirm PNNL's knowledge about dangerous waste before storing waste at the 325 HWTUs, as required in WAC 173-303-300. The purpose of waste analysis at permitted facilities is to assure that waste can be stored properly.

Waste analysis at permitted facilities consists of obtaining and reviewing a *detailed chemical, physical, and/or biological analysis* of a waste prior to storage. This detailed analysis can consist of *knowledge* of the wastes as defined in WAC 173-303-040, typically provided by the generator, data obtained by direct testing, or a combination of both. When the analysis provided by the generator relies upon knowledge, that knowledge must be documented and confirmed. The waste analysis performed by PNNL waste management staff is used to determine the acceptability of the waste for storage at the 325 HWTUs.

This WAP describes the process for inspection and, if necessary, analysis of wastes received at the 325 HWTUs to confirm that the waste matches the identity of the waste on the accompanying shipping documentation. The WAP also contains a description of the sampling methodologies, analytical techniques, and processes that are undertaken for confirmatory sampling and analysis of dangerous waste managed in the 325 HWTUs. Finally, the WAP describes the records that are maintained in order to meet requirements specified in the Hanford Facility Dangerous Waste Permit.

1

DEFINITIONS

Term	Definition
Analysis	Obtaining and reviewing information provided by the waste generator and/or provided by other means to confirm the information provided concerning a waste stream.
Compatible	As applied to suitability of containers, tanks or sampling equipment, *compatible* means the waste will not react with or otherwise damage the container, tank, or sampling equipment such that the ability of the equipment to contain the waste is not impaired. For determination of compatibility for storage, refer to definition of *incompatible waste.*
Database	The PNNL waste management database (the Integrated Waste Management System) containing profile, confirmation, storage, and shipment information on each container of waste.
Fingerprint Analysis	Testing of significant parameters expected from a waste (as documented in its approved profile) performed after physical transfer of the waste to the 325 HWTUs. Fingerprint analysis is intended to verify that the waste transferred to the 325 HWTUs matches the profile provided. Fingerprinting is usually performed by visual examination of the waste and/or use of readily available testing methods such as test kits.
Incompatible Waste	Materials/wastes unsuitable for placement in a particular device or facility because it may corrode or decay the containment materials, or is unsuitable for mixing with another waste or material because the mixture might produce heat or pressure, fire or explosion, violent reaction, toxic dusts, fumes, mists, or gases, or flammable fumes or gases. Refer to Table B.1.
Inspection	Viewing of the contents of the container, container markings and labeling, number of containers, and/or the container itself as a means of confirming the identity of the waste
Knowledge	Sufficient information about a waste to substitute reliably for direct testing of the waste. To be sufficient and reliable, the *knowledge* used must provide information necessary to manage the waste in accordance with the requirements of this chapter. [WAC 173-303-040] Note: *Knowledge* may be used by itself or in combination with testing to designate as waste pursuant to WAC 173-303-070(3)(c), or to obtain a detailed chemical, physical, and/or biological analysis of a waste as required in WAC 173-303-300(2).
Profile	A *detailed physical, chemical, and/or biological analysis of a dangerous waste* provided by the waste generator in order to allow the 325 HWTUs staff to perform waste analysis. The Chemical Disposal/Recycle Request (CDRR) and/or Radioactive Waste Disposal Request (RWDR) at PNNL currently serve as the waste profile. A sample CDRR is shown in Table B.3.
Testing	Performance of a procedure that yields a quantitative or qualitative evaluation of the type and/or quantity of materials present. Sometimes referred to as *analysis* or *laboratory analysis*, but for purposes of this procedure, the term *testing* is used to distinguish it from waste analysis (refer to definition of *analysis* above).
Verification	Determination that the waste in question is that waste described on the approved profile. Verification may include inspection and/or fingerprint analysis.
Waste Stream	Wastes that are physically or chemically different from each other; wastes that are generated from different types of processes; or wastes that are of the same type, but generated at different points in the process or at different process locations.

2

B. WASTE ANALYSIS PLAN

B.1 Unit Description

The 325 HWTUs are dangerous waste treatment and storage units owned and operated by The U.S. Department of Energy (DOE) and co-operated by Pacific Northwest National Laboratory (PNNL). The 325 HWTUs are used for the collection, consolidation, packaging, storage, treatment, and preparation for transport and disposal of dangerous waste, universal waste, and recyclables, including mixed waste. It is an integral part of the PNNL waste management system.

B.1.1 Description of Unit Processes and Activities

The 325 HWTUs are units within the 325 Building, located in the 300 Area on the Hanford Facility (refer to Addendum A for location).

The 325 Building includes the following: (1) a central portion (completed in 1953) that consists of three floors (basement, ground, and second) containing general-purpose laboratories, provided with special ventilation and work enclosures; (2) a south (front) wing containing office space, locker rooms, and a lunch room; and (3) east and west wings containing shielded enclosures with remote manipulators. The Shielded Analytical Laboratory (SAL) is located in Rooms 32, 200, 201, 202, and 203. The HWTU is located in Rooms 520, 524 and 528. The Cask Handling Area is located in Rooms 603 and 604A in the east wing. The Truck Lock is Room 610 of the east wing. The 3714 Pad is a concrete pad and surrounding soil located just northeast of the 325 Building that contains the foundation for the former 3714 Building, which was demolished in 2011.

The 325 HWTUs store and treat dangerous waste generated by Hanford Facility programs (primarily from research activities in the 325 Building and other PNNL facilities) and potentially from other onsite/offsite laboratories. Storage in containers occurs in each unit, and bench- or small-scale treatment of dangerous waste in containers occurs in the HWTU, the Cask Handling Area, and the SAL. Larger-scale treatment in containers is limited to macroencapsulation, solidification or stabilization and takes place in the Cask Handling Area, the Truck Lock, or at the 3714 Pad. At the SAL, dangerous waste liquid is stored in a tank in Room 32. As described in further detail in Addendum C, permit conditions applicable to container management in the 325 HWTUs are established in accordance with WAC 173-303-630. Similarly, permit conditions applicable to the SAL tank have been established in accordance with WAC 173-303-640.

The fire water-collection tank, which serves rooms 520 and 528 of the HWTU, is located beneath Room 520 in the basement of the 325 Building. The rectangular tank measures 1.65 meters by 2.25 meters by 1.92 meters, and has a 22,710-liter capacity. The sides and floor of the tank are constructed of epoxy-coated carbon-steel plate. The steel sides and floor provide support for the chemical-resistant polypropylene liner. The tank is secured to the concrete floor of the 325 Building with 1.3-centimeter bolts at 1.82-meter intervals.

B.1.1.1 How Waste is Accepted, Moved, Processed, and Managed

PNNL's waste management organization maintains a waste management database to support the identification and tracking of waste from profiling through final disposition, and maintain the information required by permit conditions established in accordance with WAC 173-303-380. This section contains information on waste acceptance and analysis. Waste movement, processing, and management are discussed in Addendum C.

B.1.1.1.1 Narrative Process Descriptions

Wastes to be managed at the 325 HWTUs are generated by PNNL's research laboratory and support activities, usually in small quantities. These wastes are managed in accordance with generator requirements prior to being submitted for transfer to the 325 HWTUs during the accumulation period.

B.1.1.1.2 Narrative Waste Characterization

Waste streams accepted for storage at the 325 HWTUs can be categorized as follows:

Listed Waste from Specific and Nonspecific Sources

Certain wastes from specific and nonspecific sources identified in WAC 173-303-9904 (designated with 'F' waste codes) are accepted at the 325 HWTUs for storage and subsequent shipment. Addendum A identifies the dangerous waste numbers and estimated annual management quantities for each. These estimated annual management quantities are the maximum allowable amounts for storage or treatment in the 325 HWTUs.

Spent solvents may be halogenated or non-halogenated. Spent degreasing solvents (F001) as well as spent halogenated solvents (F002) are generated primarily in research activities, with a few generated by maintenance activities. Spent non-halogenated solvents (F003, F004, and F005) are also primarily generated by research activities, with a few generated by maintenance activities. WPCB state source waste (Polychlorinated Biphenyl [PCB] electrical equipment waste) has been generated in limited amounts in the past and could be stored at the 325 HWTUs if future generating activities occur.

Discarded Commercial Chemical Products

Discarded commercial chemical products are those described in WAC 173-303-081. Addendum A identifies all of the discarded commercial chemical products listed in WAC 173-303-9903, as research activities have the potential to generate any of these wastes. Estimated annual management quantities are given based on prior experience.

These wastes ('P' and 'U' waste codes) are typically received at the 325 HWTUs in the manufacturer's original container. These containers are usually four (4) liters or less in volume, and are glass or polyethylene jars or bottles, or metal cans. Such wastes may be discarded at the end of a project, as part of a lab cleanout, or after the passage of an expiration date, that renders the chemical non-useable due to quality assurance requirements of Laboratory projects.

Characteristic Waste

Some wastes from research activities and maintenance, although not listed pursuant to WAC 173-303-081 or -082, exhibit one or more characteristics of dangerous waste described in WAC 173-303-090. Although wastes exhibiting any of these characteristics are routinely managed at the 325 HWTUs, the most prevalent waste types are ignitable wastes (D001), corrosive wastes (D002), solid corrosives (WSC2), and wastes containing chromium (D007) and/or lead (D008). All characteristic waste codes and estimated annual management quantities are given in Addendum A. These estimated annual management quantities are the maximum allowable amounts for storage or treatment in the 325 HWTUs.

Criteria Waste (Toxic and/or Persistent)

Wastes from research or maintenance activities that is not a listed waste and does not exhibit a characteristic of dangerous waste may designate as state dangerous waste criteria wastes, pursuant to WAC 173-303-100. Wastes exhibiting the criteria of toxicity (WT02) are PNNL's most prevalent waste type. All criteria waste codes and their estimated annual management quantities are given in Addendum A.

B.1.1.1.3 Waste Acceptance Process

Waste Submittal

The waste analysis process for the 325 HWTUs begins when the generating unit completes and transmits a profile to the waste management organization for the waste stream. This profile is currently submitted electronically into the waste management database by field-deployed waste management staff. The profile provides the *detailed physical, chemical, and/or biological analysis* of each waste submitted. Information required includes a physical description of the waste, accounting for 100% of the contents, and identity and concentration of the hazardous constituents known or reasonably expected to be in the waste; location and container information; identity of the waste generator; and the hazards of the waste. Profile information includes process knowledge and any available testing data on the waste.

Profile information must meet the following four distinct information needs for management of dangerous waste at the 325 HWTUs.

- Verify that wastes are properly designated in accordance with WAC 173-303 and whether those wastes are dangerous waste (DW) or EHW.
- Identify or verify the applicable treatment standards under WAC 173-303-140 and whether the waste complies with applicable treatment standards under WAC 173-303-140.
- Identify and verify specific characteristics of waste in solid, liquid, or solution form.
- Determine how to safely handle, transport, analyze, store, and dispose of the waste.

Evaluation and Acceptance

After a profile is submitted, waste management staff first performs a consistency check of profile information. For instance, profile data is checked to confirm that percentages of waste constituents listed add to 100%, physical state is consistent with chemical description, and that chemicals are compatible with container type. The purpose of this check is to determine if any process knowledge provided constitutes *knowledge* for purposes of the Dangerous Waste Regulations, i.e. is adequate to substitute for testing information in order to quantify constituents and characteristics, and enable proper management of the waste in accordance with the Dangerous Waste Regulations. Any information discrepancies are noted and resolved with the profile submitter. Discrepancies that cannot be resolved result in rejection of the waste profile.

Once the consistency check is complete, waste designation information is verified. Any constituent regulated under other regulations is also checked (e.g. PCBs, asbestos) and Department of Transportation (DOT) hazard class and packing group information is determined based on the hazard description given in DOT regulations. Applicable Land Disposal Restriction (LDR) treatment standards are identified and underlying hazardous constituents (UHC) are identified, as appropriate. The verified waste codes, other identification, LDR treatment standard and UHC information, and DOT hazard class and packing group information associated with the waste are confirmed for correct entry in the waste management database.

Once designation verification is complete, the waste management staff determines if a waste is unacceptable for storage (e.g. waste code not listed in Addendum A), and storage capacity limits are checked. If the waste is confirmed to meet the storage type and quantity limitations of Addenda A, B, and C, it meets the waste acceptance criteria, and is acceptable for storage. The approved waste is assigned a unique identification number, cell location, and hazard classification. The profile is noted as *approved.*

Confirmation of Knowledge

In PNNL's experience, process knowledge from the generator is generally sufficient to meet the requirements for a *detailed chemical, physical, and/or biological analysis* of wastes accepted at the 325 HWTUs for the following reasons:

- Wastes stored at the 325 HWTUs are generated on the Hanford Site and/or by PNNL research programs who maintain effective administrative control over individual waste generating units (i.e., the same organization generates the waste and operates the storage unit).
- Some wastes stored at the 325 HWTUs are discarded chemical products for which knowledge of waste characteristics is available without further analysis.
- Most of the waste stored at the 325 HWTUs is a result of research activities that are carefully controlled and documented; this documentation includes information on chemical constituent inputs and outputs.

To confirm the sufficiency and reliability of the knowledge provided by generators, waste management activities (e.g. satellite accumulation areas) are co-managed by field-deployed waste management staff.

These staff assists in obtaining the data and other information utilized to prepare the profile, and review the quality and sufficiency of the information provided in order to confirm that it is adequate for safely managing the waste. Other methods for confirmation noted in WAC 173-303-300(2)(a) may be used instead of or in conjunction with onsite visits and data review in special situations.

Instances where the 325 HWTUs require testing to corroborate process knowledge include the following:

- When waste management personnel have reason to suspect a change in the waste based on inconsistencies on the profile or in packaging or labeling of the waste.
- When the information submitted previously by a generator does not match the characteristics of the waste that was submitted.
- When a receiving Treatment, Storage, and Disposal (TSD) Facility rejects the waste because waste verification at that facility reveals an inconsistency with the waste profile provided by the 325 HWTUs.

Testing is not required when the inconsistency deals with a listing based on process usage (e.g. F001 designation based on use as a solvent).

If a waste stream is profiled and multiple shipments of the same waste stream are accepted using the same approved profile, it must be reevaluated when the generator and/or the 325 HWTUs personnel have reason to believe the process generating the waste, or the characteristic or the chemical constituents of the waste stream, have changed, or there is a manifest discrepancy (for wastes received from off-site), shipping paper discrepancy (receipt of wastes from on-site dangerous waste management units) or failure of the waste verification process. Even if no such instances occur, the waste stream will be re-profiled and re-evaluated at least annually.

B.1.2 Identification and Classification of Waste

The 325 HWTUs dangerous waste management units are used for container and tank storage and treatment of dangerous waste. As a result, the following waste types are not accepted for storage:

- Bulk solids (non-containerized)

Dangerous waste containing source, special nuclear, or byproduct material under the Atomic Energy Act (i.e. mixed waste) is only accepted when already containerized or when it is to be managed in the permitted tank in Room 32 of the SAL.

Refer to Addendum C, Sections C.1.10, C.1.11, and C.2.1.5 for precautions taken in the storage of various types of wastes (e.g. ignitable, reactive, or incompatible wastes).

A wide range of waste container sizes/volumes is typically used to manage wastes at the 325 HWTUs due to the variety of research and maintenance activities supported. Refer to Addendum C for a description of secondary containment and container types and sizes managed. No individual container of material requiring secondary containment per WAC 173-303-630(7) in excess of the secondary containment capacity of the location where the waste will be managed in OUG-5 dangerous waste management units will be accepted or managed at the unit without management approval and additional secondary containment system capacity provided as required by permit conditions established pursuant to WAC 173-303-630(7). No shipment of bulk liquid greater than the operational capacity of the storage tank (1218 liters) will be accepted.

Containerized wastes managed include labpacks conforming to the standards of WAC 173-303-161, and hazardous debris and contaminated soil as defined in 40 CFR 268.2 (incorporated by reference at WAC 173-303-140).

Along with waste received for storage and treatment, the 325 HWTUs also generates dangerous waste as a byproduct of waste handling and treatment activities. Typically, these wastes include personal protective equipment, rags, and other spent materials that designate as hazardous waste when discarded.

Such wastes are accumulated at the 325 HWTUs in satellite or 90-day accumulation areas (as appropriate) and a profile submitted for formal acceptance into the unit.

B.1.2.1 Dangerous Waste Numbers, Quantities, and Design Capacity

Refer to Addendum A for the waste numbers, quantities, types of treatment performed, and design capacity for the 325 HWTUs.

B.2 Waste Confirmation

B.2.1 Pre-Shipment Review

Once a waste profile has been approved per the process in Section B.1.1.1.2, it is scheduled for pickup by Waste Management staff. At pickup, waste management organization staff visits the generator storage area and make a final inspection of the waste containers to determine whether the profile and contents label information match completely, and whether the containers are adequate for transport to and storage at the 325 HWTUs. Examples of acceptable packaging include laboratory reagents in their original bottles, U.S. Department of Transportation-approved containers, spray cans, sealed ampules, paint cans, and leaking containers that have been over packed. Waste management organization staff have the authority to determine whether a container is in poor condition or inadequate for storage using the criteria referenced by WAC 173 303 190 and to use professional judgment to determine whether the packaging could leak during handling, storage, and/or treatment. The purpose of visual inspection is to confirm that the waste matches the description in the profile. As a quality assurance/quality control measure, only trained and experienced personnel conduct visual inspection of wastes to verify that the waste being picked up matches the description provided by the waste generator and evaluated during the waste verification/waste acceptance process.

If the waste is a discarded commercial chemical product, the contents of the container are inspected to verify that they match the description of the product. For other waste, e.g., spent solvents, waste descriptions are compared with the products in use at the generating unit to determine if the profile description is accurate. If, after visual inspection of the waste, any doubt remains as to the identity of the waste, the waste is not picked up. The generator is required to resubmit the profile with accurate information.

After inspection of the waste at the generating unit, and the information in the profile matches with the container labeling and visual inspection, the waste is picked up for transport to the 325 HWTUs. Any appropriate DOT labeling is applied. In addition, each waste container is labeled with a physical description of the waste (accounting for 100% of the contents), identity, and concentration of the hazardous constituents known or reasonably expected to be in the waste, and major risk(s). This information helps the waste handlers verify safe handling, storage, retrieval, and transportation of dangerous waste.

Most of the waste stored at the 325 HWTUs is generated on the Hanford Site and/or by PNNL research programs within the 300 Area. All transportation of dangerous waste to the 325 HWTUs will be according to the requirements of Permit Condition II.N. Additional requirements for waste generated outside the 300 Area include proper manifesting (if appropriate) to the 325 HWTUs and utilizing proper packaging for transport over public roadways. Although PNNL waste generated outside of the 300 Area is considered to be generated offsite since it may be transported to the 325 HWTUs on roads accessible to the public, it is generated under the same administrative controls as wastes that are generated *onsite* (i.e., in the 300 Area). Therefore, no distinction is necessary between *on-site* and *off-site* for PNNL waste with respect to the waste analysis requirements of this WAP.

B.2.2 Receipt Verification

The waste acceptance procedure for receipt of waste from both on- and off-site is based on the following requirements. These verification procedures are summarized in Table B.2.

B.2.2.1 Physical Verification Process

B.2.2.1.1 Inspection of Shipping Papers/Documentation

Document Verification

The necessary documentation (e.g. manifest or onsite shipping paper) for the entire shipment are verified (i.e., signatures are dated, all waste containers included in the shipment are accounted for and correctly indicated on the shipment documentation, there is consistency throughout the different shipment documentation, and the documentation matches the labels on the containers).

B.2.2.1.1.1.1 Response to Significant Discrepancies. The primary concern during acceptance of containers for storage is improper packaging or manifest discrepancies. Containers with such discrepancies are not accepted at the 325 HWTUs until the discrepancy has been resolved. Depending on the nature of the condition, such discrepancies can be resolved using one or more of the following alternatives.

- Incorrect or incomplete entries on the uniform hazardous waste manifest or on-site shipping documentation can be corrected or completed with concurrence of the onsite generator or offsite generator. Corrections are made by drawing a single line through the incorrect entry. Corrected entries are initialed and dated by the individual making the correction.
- The waste packages can be held and the onsite generator or offsite waste generator requested to provide verbal or written instructions for use in correcting the condition before the waste is accepted.
- Waste packages can be returned as unacceptable.
- If a noncompliant dangerous waste package is received from an offsite waste generator, the waste package is non-returnable because of condition, packaging, etc., and if an agreement cannot be reached among, the involved parties to resolve the noncompliant condition, then the issue will be referred to DOE for resolution. The Washington State Department of Ecology (Ecology) will be notified in writing if a discrepancy is not resolved within 15 days after receiving a noncompliant shipment. Pending resolution, such waste packages, although not accepted, might be placed in the 325 HWTUs. The package(s) will be segregated from other waste, and an entry will be made into the 325 HWTUs logbook describing the actions that were taken to store the packages in a safe manner until a resolution has been reached.

B.2.2.1.1.1.2 Activation of Contingency Plan for Damaged Shipment. If waste shipments arrive at the 325 HWTUs in a condition that presents a hazard to public health or the environment, the Building Emergency Procedure is implemented as described in Addendum J, Contingency Plan.

Inspection of Waste Containers

The condition of waste containers is checked to verify that the containers are in good condition (i.e., free of holes and punctures). Shielded, classified, and remote-handled mixed waste is not physically inspected except for examination of the external container.

Inspection of Container Labeling

Shipment documentation is used to verify that the containers are labeled with the appropriate Hazardous/Dangerous Waste labeling and associated markings according to the contents of the waste container.

Acceptance of Waste Containers

The 325 HWTUs personnel sign the shipment documents and retain a copy. Any discrepancies and their resolution are recorded in the waste management database and the Hanford Facility Operating Record, 325 HWTUs File.

B.2.2.2 Chemical Verification Process

The purpose of chemical verification is to verify that the waste received matches that described in the waste profile. Onsite and offsite waste received at the 325 HWTUs will receive chemical verification at the unit according to the following process.

B.2.2.2.1 Exceptions to Chemical Verification

- Laboratory reagents and commercial products such as paint, lubricants, solvent, or cleaning products are not subject to analytical verification when received in their original containers.
- Heterogeneous wastes (such as discarded machinery, shop rags, labpacks, and debris) that do not yield a representative sample are only subject to the physical screening process.
- Asbestos wastes.
- Spill cleanup wastes resulting from the spill or release of known materials.
- Wastes previously receiving chemical verification at the accumulation area (e.g. North Richland) in accordance with the requirements of this section B.2.2.2.
- Any mixed waste with a dose rate exceeding 20 millirem/hour at contact.
- Any transuranic waste (waste containing more than 100 nanocuries/gram of transuranic isotopes).
- Any shielded, classified, or remote-handled waste.

B.2.2.2.1.1 Waste designated for listing criteria based on process information (e.g. F001 waste identified as a used solvent).

B.2.2.2.2 Number of Verifications

Five percent of waste containers received from PNNL generating locations will receive chemical verification each month. The number of containers to be verified in any month is based on five percent of the number of containers received at the 325 HWTUs during the previous three months, divided by three, exclusive of those exempt from verification as described in Section B.2.2.2.1 above. Fractional numbers are rounded upwards. For example, if 40 qualifying containers are received in June 50 containers in July, and 60 containers in August, an average of 50 per month, 3 containers (50 x 5% = 2.5, rounded to 3) would be sampled and analytically verified. Note that during the first three months of operation under this WAP, the *previous three months* are the three calendar months preceding the effective date of this Permit.

Ten percent of the number of containers on any shipment from offsite (except PNNL generating locations) receives chemical verification. If a shipment contains waste from more than one generator, ten percent of containers from each generator receive chemical verification.

B.2.2.2.3 Selection Process

Randomly selected containers from onsite will receive chemical verification until the required number of verifications necessary for that month is accomplished. A variety of non-PNNL generating locations and waste types, if any, will be analyzed to the extent practicable. However, the number of containers selected from any given shipment will be based on the number of containers scheduled for pickup during the current month as well as the number of containers in the individual shipment that are subject to chemical verification.

B.2.2.2.4 Sampling

Waste containers selected for verification are sampled using the methods in WAC 173-303-110(2) for representative samples, or utilizing a similar method suitable to the container. For instance, to sample a one-liter bottle of homogeneous liquid, glass tubing, or a pipet would be utilized to obtain a representative sample instead of a composite liquid waste sampler (COLIWASA). Generally, these samples are analyzed immediately, so preservation techniques are not utilized. If the samples must be stored, they will be preserved in accordance with the requirements of the analytical technique being used (Table B.2).

B.2.2.2.5 Testing Methods

The methods utilized for chemical verification at the 325 HWTUs are selected based on the appropriateness for the waste being verified. Tests performed are selected from the following.

Water Miscibility/Separable Organics

Performed utilizing water solubility Hazcat© test kits per the instructions given in those kits. These tests are not performed on materials known to be organic peroxides, ethers, and/or water reactive.

Oxidizers

Performed utilizing oxidizer Hazcat© test kits per the instructions given in those kits. These tests are not performed on materials known to be organic peroxides, ethers, and/or water reactive.

pH

SW-846 Method 9040, 9041, or 9045 (by pH meter or pH paper). This test will not be performed on organic liquids.

Cyanides

Performed utilizing cyanide Hazcat© test kits per the instructions given in those kits.

Sulfides

Performed utilizing sulfide Hazcat© test kits per the instructions given in those kits.

Halogenated/Volatile Organics

Examination with a photoionizer or flame ionizer to determine if the waste contains volatile organic compounds. Clor-D-Tect© kits may be used to detect organic halogens.

B.2.2.2.6 Quality Assurance/Quality Control (QA/QC) for Analytical Verification

Each testing process is subject to QA/QC requirements as follows. The data quality objectives for these analyses are given in Section B.4.5.

Water Miscibility/Separable Organics

Performed utilizing water solubility Hazcat© test kits per the instructions given in those kits using test kits that are not older than the expiration date specified on the kit. Data interpretations are performed utilizing the manufacturer's instructions for the test kit.

Oxidizers

Performed according to manufacturer's instructions utilizing test kits that are not older than the expiration date specified on the kit. Data interpretations are performed utilizing the manufacturer's instructions for the test kit.

pH

Calibration of pH meters and pH paper is performed as required by the appropriate method being used (SW-846 method 9040, 9041, or 9045).

Cyanides

Performed according to manufacturer's instructions utilizing test kits that are not older than the expiration date specified on the kit. Data interpretations are performed utilizing the manufacturer's instructions for the test kit.

Sulfides

Performed according to manufacturer's instructions utilizing test kits that are not older than the expiration date specified on the kit. Data interpretations are performed utilizing the manufacturer's instructions for the test kit.

Halogenated/Volatile Organics.

The photoionizer is calibrated daily (when in use) to a standard gas mixture in accordance with manufacturer's instructions. Data interpretations are performed utilizing observed data (meter readings) with adjustment as necessary based on the relative responsiveness of the waste compared to the standard mixture utilized for calibration. These adjustments are given in photoionizer manufacturer's literature. Clor-D-Tect© tests are performed according to manufacturer's instructions utilizing test kits that are not older than the expiration date specified on the kit. Data interpretations are performed utilizing the manufacturer's instructions for the test kit.

B.2.3 Waste Acceptance

Once waste items have been confirmed by physical and necessary chemical verification, as described above, the waste is considered *accepted* and placed in the designated location in the unit determined prior to pickup. Containers of dangerous waste are managed according to the requirements of Addendum C.

B.3 Selecting Waste Analysis Parameters

Physical and chemical screening parameters are chosen from those in Sections B.3.1 and B.3.2, respectively, as described in Section B.2.2.2 and B.2.2.3 of this WAP. Parameters for confirmation of designation and compliance with LDR requirements are given in Section B.3.3. Parameters, methods, and rationale for physical and chemical screening parameters and the pre-shipment review (Section B.2.1) are summarized in Table B.2.

B.3.1 Physical Screening Parameters

B.3.1.1 Visual Inspection, Rationale

Waste containers (and contents visible through the container or through an easily and safely opened lid) are examined to confirm that waste matches the physical description given in the waste profile documentation. Labeling examination also identifies waste prohibited by LDR requirements related to downstream TSD unit acceptance criteria. For instance, an organic destined for incineration might contain acids that the intended facility does not have permit authorization to treat by DEACT.

B.3.1.2 Visual Inspection, Method

Waste containers are inspected by trained, experienced personnel to verify that it matches the description in the profile. If the waste is a discarded product, the contents of the container are inspected to verify that they match the description of the product. For other waste, e.g., spent solvents, waste descriptions are compared with the products in use at the generating unit. This information is compared to the description of the waste in the profile. If, after visual inspection of the waste and inquiry of the generating unit personnel, any doubt remains as to the identity of the waste, the waste is not picked up and required to be re-profiled by the generator.

B.3.1.3 Visual Inspection, Failure Criteria

Waste does not correlate with the description of the waste (e.g. color, layering, consistency).

B.3.2 Chemical Screening Parameters

B.3.2.1 Water Miscibility

Rationale: Water miscibility/separable organics testing is chosen to confirm that waste matches that described on waste acceptance documentation, identify separable organics, and/or identify waste prohibited by downstream TSD unit acceptance criteria. Not performed on organic peroxides, ether, or water-reactive wastes.

Method: Performed using water solubility Hazcat© test kits per the instructions given in those kits.

Failure Criteria: Test results do not confirm the presence or absence of constituents of interest.

B.3.2.2 Oxidizer

Rationale: The oxidizer test is performed to confirm that waste matches that described on waste acceptance documentation, and verify waste requires oxidizer management pursuant to WAC 173-303-395 (1)(b) at the 325 HWTUs. Not performed on organic peroxides, ether, or water-reactive compounds.

Method: HazCat© Oxidizer Screen Test Kit

Failure Criteria: Test results do not confirm the presence or absence of constituents of interest.

B.3.2.3 pH

Rationale: Used to confirm that waste matches that described on waste acceptance documentation and to verify compliance with WAC 173-303-395(1)(b) concerning separation of incompatible wastes. (Not used for solids or organic liquids).

Method: pH Screen SW-846 Method 9040C or 9045 (pH meter) or 9041A (pH paper).

Failure Criteria: Test result does not match the pH given in the profile within a 4.0 pH unit tolerance, or the observed pH results in a designation change (e.g. profiled as non-corrosive, but exhibits a pH $\leq$2.0 or $\geq$12.5).

B.3.2.4 Cyanides

Rationale: Confirm that waste matches that described on waste acceptance documentation; verify waste requires compliance with WAC 173-303-395(1)(b) concerning separation of incompatible wastes.

Method: HazCat© Cyanide Screen Test Kit

Failure Criteria: Test results do not confirm the presence or absence of cyanide.

B.3.2.5 Sulfides

Rationale: Confirm that waste matches that described on waste acceptance documentation; verify waste requires compliance with WAC 173-303-395(1)(b) concerning separation of incompatible wastes.

Method: HazCat© Sulfide Screen Test Kit

Failure Criteria: Test results do not confirm the presence or absence of sulfide.

B.3.2.6 Halogenated/Volatile Organic Compounds

Rationale: Confirm that waste matches that described on waste acceptance documentation

Method: Photoionizer or Flame Ionizer, or Clor-D-Tect Kits©

Failure Criteria: Test results do not confirm the presence or absence of organics (photoionizer or flame ionizer testing) or of halogenated organics (Clor-D-Tect Kits).

If a waste is determined to have failed any of the tests performed above, the discrepancy resolution process described in Section B.2.2.1.1.1.1 of this WAP is utilized to resolve the discrepancy. If the discrepancy cannot be easily resolved, the waste is returned to the generator and must be re-profiled prior to consideration for acceptance.

B.3.3 Other Analysis Parameters

The 325 HWTUs does not have any process vents that manage hazardous waste with organic concentrations of at least 10 parts per million by weight percent, or pumps, or compressors used more than 300 hours per year that come into contact with hazardous waste with an organic concentration of at least 10 percent by weight. As a result, no special waste analysis requirements for volatile organics are required by WAC 173-303-690 or -691.

A variety of small volume chemical wastes is generated by PNNL's research laboratory activities. These containers typically range in sizes from 10 ml to 5 gallons.

These wastes are brought to the 325 HWTUs and segregated by compatibility for storage (refer to *incompatible waste* in the definitions section of this WAP) in the unit until enough waste is accumulated to fill a labpack or bulking container, usually a 30- to 55-gallon drum. All containers having a design capacity greater than 0.1 m3 to less than or equal to 0.46 m3 are equipped with a cover and comply with all applicable Department of Transportation regulations on packaging hazardous waste for transport under 49 CFR 178.

DOT approved intermediate bulk packaging may be used for some wastes in a solid form and containing less than 500 parts per million volume (ppmv) volatile organics and/or meets the LDR treatment standards for the waste with regard to organic hazardous constituents. These containers range in size from 0.1 cu yard (27 cu ft) to 1.6 cu yard (43 cu ft). When intermediate bulk packaging is used for dangerous waste, determination of organics content will comply with waste determination procedures of 40 CFR 264.1083, incorporated by reference at WAC 173-303-692(2). Alternatively, waste will be containerized compliant with 40 CFR 264.1086, as described in Addendum C, Section C.3, prior to being placed in the intermediate bulk packaging for transport.

B.4 Selecting Sampling Procedures

B.4.1 Sampling Strategies

Samples are collected for chemical screening as required by Section B.2.2.2 of this WAP. Sample collection methods conform to the representative sample methods referenced in WAC 173-303-110(2).

B.4.2 Sampling Methods

In all instances, sampling methods will conform to the representative sample method referenced in WAC 173-303-110(2), i.e., ASTM standards for solids and SW-846 for liquids. Some adaptation of the method may be necessary for small containers being sampled for chemical screening, as discussed in Section B.2.2.2.4. Exceptions to the methods may also be used if permissible pursuant to WAC 173-303-110, NRC/EPA *Clarification of RCRA Hazardous Waste Testing Requirements for Low-Level Radioactive Mixed Waste – Final Guidance* (62 Federal Register 62080, November 20, 1997), Data Quality Objectives, and/or an alternative approved by Ecology pursuant to the permit modification process. The specific sampling methods and equipment used varies with the chemical and physical nature of the waste material and the sampling circumstances.

B.4.3 Selecting Sampling Equipment

Representative samples of liquid waste from containers (vertical *core sections*) are typically obtained using a composite liquid waste sampler (COLIWASA) or tubing, as appropriate. The sampler is long enough to reach the bottom of the container in order to provide a representative sample of all phases of the containerized liquid waste. If a liquid waste has more than one phase, each phase is separated for individual testing, depending on the waste management pathways of the phases.

Other waste types that might require sampling are sludges, powders, and granules. In general, nonviscous sludges are sampled using a COLIWASA. Highly viscous sludges and cohesive solids are sampled using a trier, as described in ASTM Standard D1452-80. Dry powders and granules are sampled using a thief, as described in ASTM Standard D346-75.

Samplers are constructed of material compatible with the waste. In general, aqueous liquids are sampled using polyethylene samplers, organic liquids using glass samplers, and solids using polyethylene samplers. Disposable samplers are used whenever possible to eliminate the potential for cross-contamination. If non-disposable sampling equipment is used, it is decontaminated between samples as necessary to ensure subsequent samples are representative of the wastes being sampled.

B.4.4 Sample Preservation

All sample containers, preservation techniques, and hold times follow SW-846 protocol. Many samples are immediately analyzed at the 325 HWTUs or in nearby laboratories in the 325 Building and are not preserved.

B.4.5 Establishing Quality Assurance and Quality Control for Sampling

Pacific Northwest National Laboratory is committed to maintaining a high standard of quality for all of its activities. A crucial element in maintaining that standard is a quality-assurance program that provides management controls for conducting activities in a planned and controlled manner and enabling the verification of those activities.

The QA/QC objective of the 325 HWTUs is to control and characterize errors associated with collected data and to illustrate that waste testing has been performed according to specification in this waste analysis plan.

The data-quality objectives (DQO) for the waste sampling and data analyses are as follows:

- Determine if waste samples are representative of the contents of the containers at the time the samples were taken.
- Determine if waste accepted for storage meets the 325 HWTUs waste-acceptance criteria (Addendum B).
- Determine if waste to be accepted match the corresponding waste description in the approved waste profile.

B.5 Laboratory Selection and Quality Assurance/Quality Control

B.5.1 Evaluation of Laboratories

Laboratory selection is limited. Preference will be given to any PNNL facility or other laboratories on the Hanford Facility that exhibit-demonstrated experience and capabilities in four major areas:

- Comprehensive written QA/QC program based on DOE-RL requirements specifically for that laboratory
- Audited for effective implementation of QA/QC program
- Participate in performance-evaluation samples to demonstrate analytical proficiency
- Demonstrated ability to produce analytical data meeting the data quality requirements of this WAP.

All laboratories (onsite or offsite) are required to have the following QA/QC documentation:

- Daily analytical data generated in the contracted analytical laboratories are controlled by the implementation of an analytical laboratory QA plan.
- Before commencement of the contract for analytical work, the laboratory will have its QA plan available for review. At a minimum, the QA plan will document the following:
  - Sample custody and management practices.
  - Requirements for sample preparation and analytical procedures.
  - Instrument maintenance and calibration requirements.
  - Internal QA/QC measures, including the use of method blanks.
  - Required sample preservation protocols.
  - Analysis capabilities.

B.5.2 Quality Assurance/Quality Control Objectives

The objective of the QA/QC program is to control and characterize any errors associated with the collected data and to confirm that the data collected is adequate for its intended purpose. Quality-assurance activities, such as the use of standard methods for locating and collecting samples, are intended to limit the introduction of error. Quality-control activities, such as the collection of duplicate samples and the inclusion of blanks in sample sets, are intended to provide the information required to characterize any errors in the data.

Other QC activities, such as planning the QC program and auditing ongoing and completed activities, verify that the specified methods are followed and that the QA information needed for characterizing error is obtained. To illustrate that waste testing has been performed according to requirements of this waste analysis plan, activities include:

- Field inspections–performed and documented by waste management staff at the generating location. The inspections primarily are visual examinations but might include measurements of materials and equipment used, techniques employed, and the final products. The purpose of these inspections is to confirm the sufficiency and reliability of the knowledge used for the waste profile.
- Field-testing–performed onsite by the 325 HWTUs staff (or designee) according to specified procedures or protocol identified by the manufacturer's instructions supplied in the field test kits.
- Laboratory analyses–performed by onsite or offsite laboratories on samples of waste. The purpose of the laboratory analyses is to determine constituents or characteristics present and the concentration or level.

The 325 HWTUs will assess analytical data used for decision making according to the following quality standards, as appropriate for the data considered:

- Precision: Agreement between the collected samples/duplicates for the same parameters, at the same location, subjected to the same preparation and analytical techniques. Analytical precision also includes agreement among individual test portions taken from the same sample.
- Accuracy: Agreement between the observed data and the result of QA samples (e.g. certified standards, in-house standards, and performance evaluation samples).
- Representativeness: The degree to which the data accurately represent the waste stream. Criteria evaluated include number and adequacy of sampling locations, use of appropriate sampling and analytical methods, and documentation of environmental conditions at time of sampling.
- Completeness: Amount of data obtained versus amount requested.
- Comparability: Ability to compare one data set to another. Usually addressed by evaluating proper use of standard methods prescribed in this WAP.

These practices verify that all data and the decisions based on that data are technically sound, statistically valid, and properly documented.

The primary purpose of waste testing is to confirm the waste is acceptable for treatment or storage at the 325 HWTUs in compliance with the requirements of this WAP. Waste testing also is performed to verify the safe management of waste being stored and control of the acceptance of waste for storage. The specific objectives of the waste-sampling and analysis program at the 325 HWTUs are as follows:

- Identify the presence of waste that is incompatible with waste currently stored.
- Provide a detailed chemical and physical analysis of the waste before the waste is accepted at the 325 HWTUs to ensure proper management and disposal.
- Provide an analysis that is accurate and up-to-date.
- Ensure safe management of waste undergoing storage at the 325 HWTUs.
- Demonstrate compliance with applicable LDR treatment standards, for waste treated at the 325 HWTUs.
- Identify and reject waste that does not meet the 325 HWTUs acceptance requirements (e.g., incomplete information).

B.5.3 Laboratory Quality Assurance/Quality Control

All analytical work performed by independent laboratories, is defined, and controlled by a Statement of Work, prepared in accordance with administrative procedures and requirements of this WAP.

The daily quality of analytical data generated in the analytical laboratories will be controlled by the implementation of an analytical laboratory QA plan. At a minimum, the plan will document the following:

- Sample custody and management practices.
- Requirements for sample preparation and analytical procedures.
- Instrument maintenance and calibration requirements.
- Internal QA/QC measures, including the use of method blanks.
- Required sample preservation protocols following receipt of samples at the laboratory.
- Analysis capabilities.

The types of internal quality-control checks are as follows and are used as specified in the analytical laboratory's program as described in Section B.5.1:

- Method Blanks–Method blanks usually consist of laboratory reagent-grade water treated in the same manner as the sample (i.e., digested, extracted, distilled) that is analyzed and reported as a standard sample would be reported.
- Method Blank Spike–A method blank spike is a sample of laboratory reagent-grade water fortified (spiked) with the analytes of interest, which is prepared and analyzed with the associated sample batch.
- Laboratory Control Sample–A QC sample introduced into a process to monitor the performance of the system.
- Matrix Spikes–An aliquot of sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis.
- Laboratory Duplicate Samples–Duplicate samples are obtained by splitting a field sample into two separate aliquots and performing two separate analyses on the aliquots. The analyses of laboratory duplicates monitor the precision of the analytical method for the sample matrix; however, the analyses might be affected by nonhomogeneity of the sample, in particular, by nonaqueous samples. Duplicates are performed only in association with selected protocols. Duplicates are performed only in association with selected protocols. Laboratory duplicates are performed on 5 percent of the samples (1 in 20) or one per batch of samples. If the precision value exceeds the control limit, then the sample set must be reanalyzed for the parameter in question.
- Known QC Check Sample–This is a reference QC sample as denoted by SW-846 of known concentration, obtained from the EPA, the National Institute of Standards and Technology, or an EPA-approved commercial source. This QC sample is taken to check the accuracy of an analytical procedure. The QC sample is particularly applicable when a minor revision or adjustment has been made to an analytical procedure or instrument. The results of a QC-check standard analysis are compared with the true values, and the percent recovery of the check sample is calculated.

PNNL Analytical Chemistry Laboratory QA/QC

PNNL's analytical chemistry laboratory may need to be used to analyze samples of potentially radioactive dangerous waste. It has a rigorous QA plan that verifies that data produced are defensible, scientifically valid, and of known precision and accuracy, and meets the requirements of its clients.

B.5.4 Data Assessment

Analytical data will be communicated clearly and documented to verify that laboratory data-quality objectives are achieved.

- The acquired data need to be scientifically sound, of known quality, and thoroughly documented. The DQOs for the data assessment are given in Section B.5.2.

B.6 Selecting Waste Re-Evaluation Frequencies

B.6.1 Periodic Re-Evaluation

Periodic re-evaluation is an evaluation of a waste stream that provides verification that the results from the initial verification are still valid. Periodic re-evaluation of a waste stream also checks for changes in the waste stream. Most waste stream containers are individually profiled, and hence subject to both physical and chemical analysis as described in Section B.2.2.1 and B.2.2.2 of this WAP, each time they are received at the 325 Hazardous Waste Treatment Units. Any waste stream received by the 325 Hazardous Waste Treatment Units not re-profiled each time containers of that waste stream are submitted (i.e. *standing profiles*) will be re-evaluated at least annually.

B.6.2 Re-Evaluation for Cause

Re-evaluation of a waste stream under a *standing profile* will also be required if any of the following occur:

- The 325 Hazardous Waste Treatment Units personnel have reason to suspect a change in the waste, based on inconsistencies in packaging, labeling, or visual inspection of the waste.
- The information submitted previously does not match the characteristics of the waste submitted as identified through fingerprint testing.
- The process generating the waste changes

B.7 Special Waste Analysis Procedural Requirements

B.7.1 Procedures for Receiving Onsite and Offsite Waste

Most of the waste stored at the 325 Hazardous Waste Treatment Units is generated on the Hanford Site and/or by PNNL research programs within the 300 Area. Additional requirements for waste generated off the Hanford Site include proper manifesting (if required) to the 325 Hazardous Waste Treatment Units and proper packaging for transport over public roadways. Offsite waste is subject to more stringent chemical verification (Section B.2.2.2.2). Although PNNL waste generated outside of the 300 Area is considered to be generated offsite since it may be transported to the 325 Hazardous Waste Treatment Units on roads accessible to the public, it is under the same administrative controls as wastes that are generated onsite (i.e., in the 300 Area).

The procedures for receiving waste at the 325 Hazardous Waste Treatment Units are given in Section B.2.

B.7.2 Provisions for Complying with Land Disposal Restriction Requirements

The *Dangerous Waste Regulations* prohibit the land disposal of certain types of wastes. Most of the waste types stored at the 325 Hazardous Waste Treatment Units falls within the purview of these land-disposal restrictions (LDRs). Occasionally, treatment takes place that is intended to meet the applicable LDRs for a stored waste. Information presented below describes how generators and the 325 Hazardous Waste Treatment Units personnel characterize, document, and certify waste subject to LDR requirements.

B.7.2.1 Waste Treatment

Permitted waste treatment occurs at the 325 Hazardous Waste Treatment Units. Waste received may or may not meet the applicable LDR treatment standards determined during the acceptance process (Section B.2). Waste received for storage that does not meet the applicable LDR treatment standards at the *point of generation* will receive treatment at the 325 Hazardous Waste Treatment Units, and/or by offsite facilities.

Shipments of waste shall not be accepted from any non-PNNL generator without any required LDR certification accompanying each shipment. For waste received from non-PNNL generators, the 325 Hazardous Waste Treatment Units shall receive the information required by WAC 173-303-140 regarding LDR wastes. The generator must sign the LDR certification.

The types and quantities of waste treated at the 325 Hazardous Waste Treatment Units are described in Addendum A. When these treatments are performed to meet applicable LDR treatment standards, the requirements of this section apply.

Since treatments conducted at the 325 Hazardous Waste Treatment Units are generally conducted as small bench-scale operations (except for stabilization in larger containers and in-tank treatments), trace contaminants in wastes are usually not a threat to the safety or conduct of these treatments. However, before accepting waste for treatment via thermal treatment (T11-T18) or biological treatment (T67-T77) technologies given in WAC 173-303-380(2)(d), 325 HWTUs staff will review, and amend if necessary, this WAP to include any additional data needs expected to be triggered by those technologies and the need to demonstrate compliance with applicable LDR treatment standards.

B.7.2.2 Sampling and Analytical Methods

Testing of treated waste will be performed as provided in 40 CFR 268.7(b) according to the treatment standards of 40 CFR 268.40 (adopted by reference at WAC 173-303-140). Sampling methods for treated wastes will be chosen from the methods given in Section B.4 appropriate to the treated waste. Analytical methods used for confirmation that the specified treatment standard(s) of 40 CFR 268.40 (incorporated by reference at WAC 173-303-140) and any applicable state-specific LDRs will be selected from those specified in WAC 173-303-110(3) as appropriate for the treated waste being analyzed.

Since most wastes are submitted as individual waste streams, sampling and analysis of treated waste is performed on each batch as specified in 40 CFR 268.40(b), adopted by reference at WAC 173-303-140.

B.7.2.3 Land Disposal Restriction Certification of Treatment

Permitted waste treatment occurs at the 325 Hazardous Waste Treatment Units. Certification of treatment related to waste treated at the 325 Hazardous Waste Treatment Units is managed in accordance with the recordkeeping process described in Section B.8.

B.8 Recordkeeping

Records associated with the waste-analysis plan and waste-verification program are maintained by the waste-management organization and are placed in the Hanford Facility Operating Record, 325 HWTUs File. A copy of the profile for each waste stream accepted at the 325 Hazardous Waste Treatment Units shall be placed in the Hanford Facility Operating Record, 325 HWTUs File. Organizational units associated with generator activities maintain their sampling and analysis records. The waste analysis plan shall be revised through the permit modification process whenever regulation changes affect the waste analysis plan.

The 325 Hazardous Waste Treatment Units has and will continue to receive and store restricted or prohibited waste. Because the 325 Hazardous Waste Treatment Units personnel verify designations and characterization, including LDR determinations, qualified staff for PNNL-generated waste prepare all notifications and certifications, as required by 40 CFR 268, incorporated by reference by WAC 173-303-140. The 325 Hazardous Waste Treatment Units staff collects information from generators via the waste profile to assure that applicable LDR treatment standards have been properly identified, as well as any information documenting compliance with applicable LDR treatment standards. The notifications and certifications are submitted to onsite and offsite TSD units during the waste-shipment process. Additionally, any necessary LDR treatment variance requests are prepared by PNNL qualified staff for U.S. DOE submittal to Ecology for approval.

The 325 Hazardous Waste Treatment Units staff requires applicable LDR information/notifications from non-PNNL generators.

Where a restricted or prohibited waste does not meet the applicable treatment standards set forth in 40 CFR 268, Subpart D, the 325 Hazardous Waste Treatment Units provides to the onsite dangerous waste management unit or offsite TSD facility a written notice that includes the information required by 40 CFR 268.7.

In instances where the 325 HWTUs staff determines that a restricted waste is being managed that can be land-disposed without further treatment, the 325 HWTUs staff submits a written notice and certification to the onsite dangerous waste management unit or offsite TSD facility where the waste is being shipped, stating that the waste meets applicable treatment standards set forth in 40 CFR 268, Subpart D, incorporated by reference by WAC 173-303-140, and includes the information required by 40 CFR 268.7.

The certification accompanying any of the notices previously described is signed by an authorized representative of the generator and states the following:

> *I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR 268, Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d). I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.*

Certifications and notifications of treatment are prepared and submitted in accordance with the applicable requirements of 40 CFR 268.7(b), incorporated by reference by WAC 173-303-140.

Copies of all notices and certifications described are placed in the Hanford Facility Operating Record, 325 HWTUs File and retained in accordance with the requirements of the Hanford Facility RCRA Permit general conditions for recordkeeping.

B.9 References

U.S. Environmental Protection Agency. 1994. *Waste Analysis At Facilities That Generate, Treat, Store, And Dispose of Hazardous Waste: A Guidance Manual.* OSWER 9938.4-03, Washington, DC.

Washington Administrative Code. 2009. *Dangerous Waste Regulations.* WAC 173-303, Olympia, WA.

Washington Department of Ecology. 2008. *Hanford Facility Resource Conservation and Recovery Act Permit*, Revision 8, as amended.

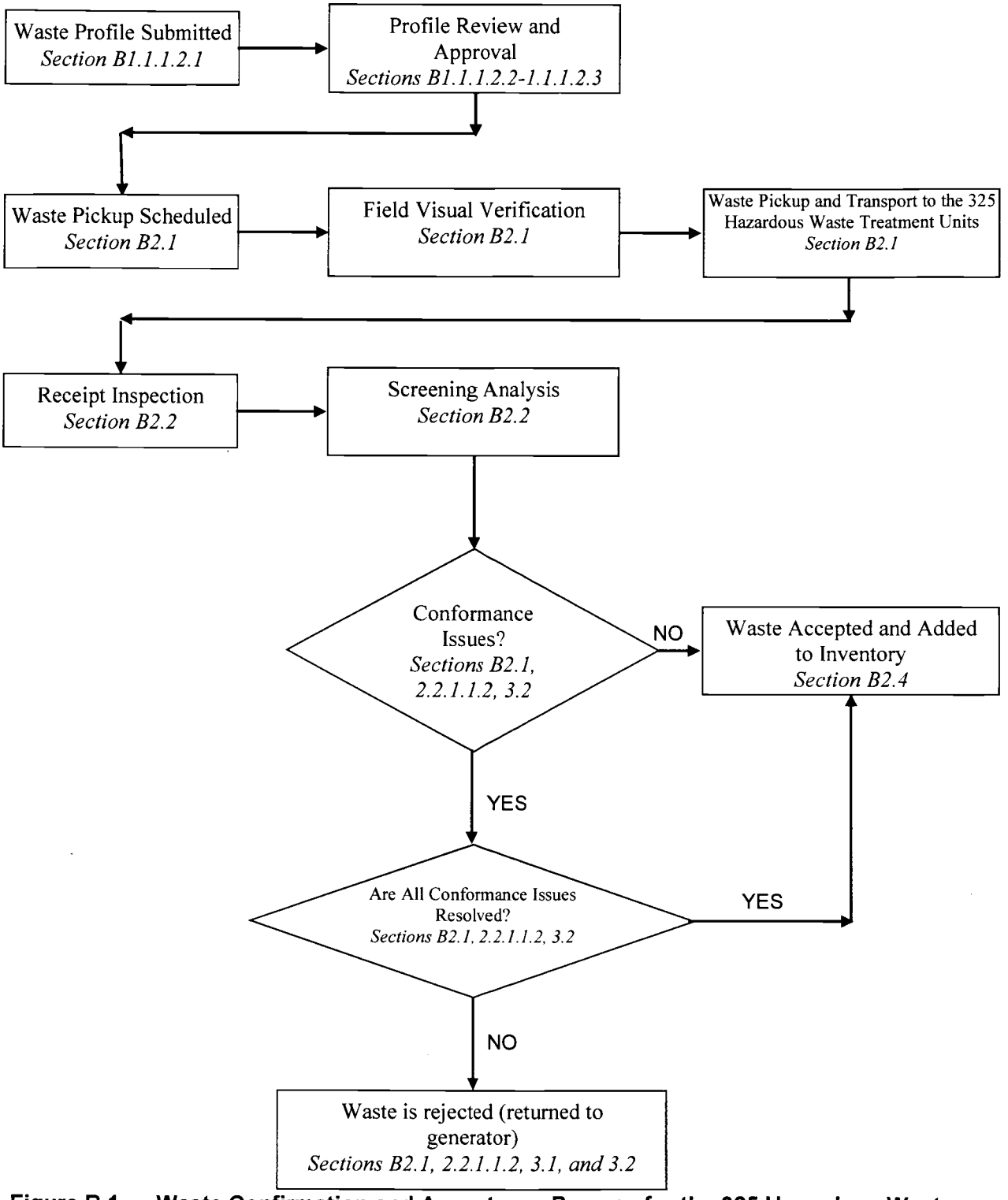

Figure B.1. Waste Confirmation and Acceptance Process for the 325 Hazardous Waste Treatment Units

1

Table B.1. Waste Compatibility Chart

Class or Division[1]		Notes	1.1 1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3 Gas Zone A	2.3 Gas Zone B	3	4.1	4.2	4.3	5.1	5.2	6.1 Liquids PGI Zone A	7	8 Liquids Only
Explosives	1.1 1.2	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives	1.3		*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives	1.4		*	*	*	*	*	O		O	O	O		O				O		O
Very insensitive explosives	1.5	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Extremely insensitive explosives	1.6		*	*	*	*	*													
Flammable gases	2.1		X	X	O	X				X	O							O	O	
Non-toxic, non-flammable gases	2.2		X			X														
Poisonous gas Zone A	2.3		X	X	O	X		X				X	X	X	X	X	X			X
Poisonous gas Zone B	2.3		X	X	O	X		O				O	O	O	O	O	O			O
Flammable liquids	3		X	X	O	X				X	O					O		X		
Flammable solids	4.1		X			X				X	O							X		O
Spontaneously combustible materials	4.2		X	X	O	X				X	O							X		X
Dangerous when wet materials	4.3		X	X		X				X	O							X		O
Oxidizers	5.1	A	X	X		X				X	O	O						X		O
Organic peroxides	5.2		X	X						X	O							X		O
Poisonous liquids PG I Zone A	6.1		X	X	O	X		O				X	X	X	X	X	X			X
Radioactive materials	7		X			X		O												
Corrosive liquids	8		X	X	O	X				X	O		O	X	O	O	O	X		

2 (Key on following page)

[1] For definition of these hazard classes, refer to 49 CFR 173.2.

Table B.1 Key

Notation	Description
(blank)	No incompatibility restrictions apply; materials may be stored together. Also true for any hazard class not shown (e.g. state-only dangerous waste)
X	Materials may not be stored together in the same cell; separate secondary containment is required.
O	Materials may not be stored together in the same secondary containment, but may be stored in the same cell if necessary, provided individual secondary containment devices are provided.
*	Explosives compatibility is described in 49 CFR 174.81(f) (refer to Table given there)
A	Notwithstanding the 'X' in the table, ammonium nitrate fertilizer may be stored with Division 1.1 or 1.5 materials if necessary.

Source: 49 CFR 174.81

1 **Table B.2. Summary of Test Parameters, Rationales, and Methods**

Parameter[a]	Method[b]	Rationale for Selection
Physical Screening		
Visual inspection	Field method–observe phases, presence of solids in waste	Confirm that waste matches that described on waste acceptance documentation; identify waste prohibited by LDR requirements related to downstream TSD unit acceptance criteria
Chemical Screening		
Water miscibility/separable organics (c)	Water solubility Hazcat © test kits	Confirm that waste matches that described on waste acceptance documentation; identify separable organics; identify waste prohibited by LDR requirements related to downstream TSD unit acceptance criteria
Oxidizer	Oxidizer Screen Hazcat © test kits	Confirm that waste matches that described on waste acceptance documentation; verify compliance with WAC 173-303-395(1)(b)
pH	pH screen SW-846 Method 9040, 9041, or 9045	Confirm that waste matches that described on waste acceptance documentation; verify compliance with WAC 173-303-395(1)(b)
Cyanides	Cyanide screen Hazcat © test kits	Confirm that waste matches that described on waste acceptance documentation; verify compliance with WAC 173-303-395(1)(b)
Sulfides	Sulfide screen Hazcat © test kits	Confirm that waste matches that described on waste acceptance documentation; verify compliance with WAC 173-303-395(1)(b)
Halogenated/Volatile Organic Compounds	Photoionizer or Flame Ionizer, or Clor-D-Tect Kits©	Confirm that waste matches that described on waste acceptance documentation
Pre-Shipment Review		
Mercury (total)	Generator knowledge or SW-846 Method 7470/7471	Identify waste prohibited by LDR requirements related to downstream TSD unit acceptance criteria.
Toxicity characteristic organic compounds (d)	Generator knowledge or SW-846 Methods 1311 and 8260 (volatile organic compounds) and 8270 (semi volatile organic compounds)	Identify waste not identified in Addendum A, Part A Form
Polycyclic aromatic hydrocarbons	Generator knowledge or SW-846 Method 8270 or 8100	Identify waste not identified in Addendum A, Part A Form, (for waste with >1% solids and for which WP03 could apply)

(a) Addition parameters can be used on current waste acceptance criteria of the downstream TSD unit. Operation limits transfer/shipments are based on current waste acceptance criteria.

(b) Procedures based on EPA SW-846, unless otherwise noted. When regulations require a specific method, the method shall be followed.

(c) These tests will not be performed on materials known to be organic peroxides, ether, and/or water reactive compounds.

(d) This test is only performed on waste to be stored in tank TK-1 in addition to any other appropriate chemical screening.

2

1 **Table B.3. Sample Chemical Disposal/Recycle Request**

Field Chemical Disposal/Recycle Request

Print

Generator: _____ PR #: _____ WP#: _____

Location of Waste (Area/Bldg/Rm) _____ Location Details: _____

Contract: _____ Type of Area: ☐ 90-Day ☐ SAA Accumulation Date: _____ ☐ Sewer Approval: ☐ Annual ☐ One-time

Type of Waste: ☑ Non-Radioactive ☐ Recycle ☐ Non-RCRA PCE PCB OOS Date: _____ includes: ☐ BSL1 ☐ BSL2

☐ Radioactive ☐ Redistribute Bio Work Permit #: _____

Discharge Rate: _____

Generator ID (Container No.)	Container Type	Container size	Container Status	Waste Description	Physical State	Material Status	Waste Weight	Waste Volume	pH	Chemical Constituents	Wt% or ppm

Generator's Signature: _____ PR#: _____ Date: _____

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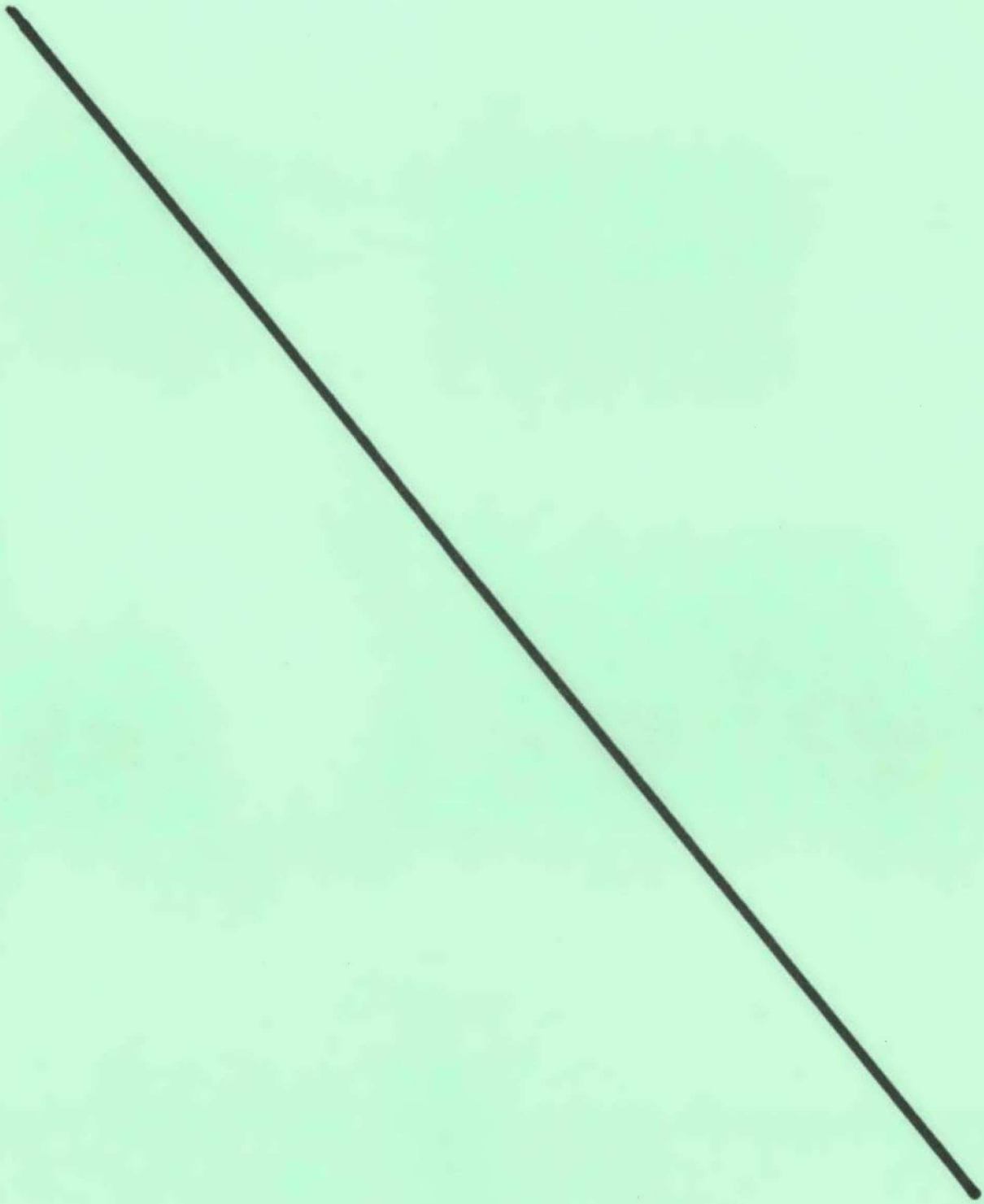

ADDENDUM C
PROCESS INFORMATION

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ADDENDUM C
PROCESS INFORMATION

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C. PROCESS INFORMATION

This addendum provides a description of waste management, equipment, treatment processes, and storage operations.

The 325 Hazardous Waste Treatment Units (HWTU) receive and treat and/or store wastes described in Addendum B, Waste Analysis Plan. Small-volume containers are segregated by compatibility and stored until sufficient quantity is accumulated to prepare a labpack or bulk container (usually a 208-liter (55 gallon) drum). Larger waste items (or waste containers) may be placed in intermediate bulk containers (e.g. boxes) and stabilized to meet LDRs and/or to meet receiving facility anti-subsidence criteria. Waste introduced into the Shielded Analytical Laboratory (SAL) tank is containerized for further management as described in Section C.2.1. Containers are repackaged for shipment as necessary and shipping documentation prepared pursuant to Permit Condition II.N for shipment to a permitted onsite dangerous waste management unit or offsite Treatment, Storage, and Disposal (TSD) Facility for any necessary further treatment and compliant disposal.

C.1 Containers

The following sections describe the management of dangerous waste in containers at the 325 HWTUs. Container management occurs to store and treat dangerous wastes generated from onsite programs, primarily research laboratory analytical activities in the 325 Building and other PNNL facilities. Containers are then prepared for shipment to other on-site units or off-site TSD facilities for further treatment as required and compliant disposal. Descriptions of the containers used are provided in the sections that follow.

C.1.1 Container Selection

All containers of dangerous waste are labeled to describe the contents of the container and the major hazards of the waste as required under WAC 173-303-395 and WAC 173-303-630(3). Each container is assigned a unique identifying number. All containers used for onsite transfer are selected and labeled according to requirements of this permit, and any other applicable rules and regulations, such as 49 CFR as required by WAC 173-303-190.

C.1.1.1 Containers Located in the Hazardous Waste Treatment Unit

Rooms 520, 524 and 528 of the HWTU are used to store and treat dangerous waste generated primarily from laboratory operations throughout the 325 Building and the Hanford Facility. The containers used to store and treat dangerous waste vary widely from original manufacturer containers to laboratory glassware for sample analysis or to 322-liter containers used to overpack smaller containers. Containers used are selected based on several criteria, which may include guidance provided in PNNL's Environmental Management System, Department of Transportation container specifications, specific safety requirements (e.g. fire code requirements for storage of flammable liquids), compatibility with the waste, and/or waste acceptance criteria provided by the facilities to which the waste will ultimately be shipped. Suitable containers are identified by the waste generator and reviewed by 325 HWTUs staff prior to waste acceptance. Acceptable containers for acidic waste include plastic, steel lined with plastic, glass, and fiberglass containers. Acceptable containers for other waste include steel, glass, fiberglass, plastic, and steel lined with plastic. Table C.1 provides an example of the types of containers that could be used in the HWTU rooms, including the material of construction and the capacity of the container.

All flammable liquid waste is stored in compatible containers and in Underwriter's Laboratory (UL)-listed and Factory Mutual (FM)-approved flammable storage. Wastes that also designate as ignitable are managed according to the requirements of WAC 173-303-630(8)(b) and WAC 173-303-395(1)(a)-(c). Solid chemicals are stored on shelving or in drums in specifically designated areas based on the hazard classification (49 CFR 172.101).

C.1.1.2 Shielded Analytical Laboratory Containers

The primary function of the SAL is to conduct preparation and analysis of samples of highly radioactive materials originating from various locations on the Hanford Site. The types of containers used to store dangerous waste in the SAL can vary widely from laboratory glassware for sample analysis to 322-liter containers used to overpack smaller containers.

The containers used for storage or treatment of dangerous waste are compatible with the waste stored in the containers. Containers used are selected based on several criteria, which may include guidance provided in PNNL's Environmental Management System, Department of Transportation container specifications, specific safety requirements (e.g. fire code requirements for storage of flammable liquids), compatibility with the waste, and/or waste acceptance criteria provided by the facilities to which the waste will ultimately be shipped. Suitable containers are identified by the waste generator and reviewed by 325 HWTUs staff prior to waste acceptance. Acceptable containers for acidic waste include plastic, steel lined with plastic, glass, and fiberglass containers. Acceptable containers for other waste include steel, glass, fiberglass, plastic, and steel lined with plastic. Table C.1 provides an example of the types of container that could be used in the SAL, including the material of construction and the capacity of the container.

Rooms 32, 200, 201, 202, and 203 are used to store dangerous waste in containers. The back face of the SAL (Rooms 200, 202, and 203) is typically used to store waste in larger containers. These containers include various types of 208-liter steel containers (lined and unlined). Because of the nature of some mixed waste being stored at the SAL, it is often necessary that these standard 208-liter containers be modified. This modification ensures that the containers are specially shielded to be compliant with as low as reasonably achievable (ALARA) criteria. These specially designed shielded containers are packaged to contain anywhere from 3.79 liters to 53 liters of waste depending on the amount of shielding required. The solid waste typically is packed in individual 3.79-liter to 4.73-liter containers before placement in the 208-liter shielded container. The shielding is accomplished by surrounding the small containers with concrete, lead, or other materials.

All flammable liquid waste is segregated from any incompatible waste types and packaged in approved containers as described above.

C.1.1.3 Containers Located in the Cask Handling Area, Truck Lock, and 3714 Pad

The portions of the Cask Handling Area (Rooms 603 and 604A) noted in Addendum A, the Truck Lock, and the 3714 Pad will be utilized only for the storage or treatment of waste that has already been packaged, except for small-scale container treatment in the fume hood in the Cask Handling Area and for stabilization in containers in all three units. Stored waste will generally be in containers of 5 gallons capacity or larger, including intermediate bulk packaging containers ranging in size from 0.1 cu yard (27 cu ft) to 1.6 cu yard (43 cu ft).

The containers used for storage or treatment of dangerous waste are compatible with the waste stored in the containers. Containers used are selected based on several criteria, which may include guidance provided in PNNL's Environmental Management System, Department of Transportation container specifications, specific safety requirements (e.g. fire code requirements for storage of flammable liquids), compatibility with the waste, and/or waste acceptance criteria provided by the facilities to which the waste will ultimately be shipped. Suitable containers are identified by the waste generator and reviewed by 325 HWTUs staff prior to waste acceptance. Acceptable containers for acidic waste include plastic, steel lined with plastic, glass, and fiberglass containers. Acceptable containers for other waste include steel, glass, fiberglass, plastic, and steel lined with plastic. Table C.1 provides an example of the types of container that could be used, including the material of construction and the capacity of the container.

Stored containers include various types of 208-liter steel containers (lined and unlined). Because of the nature of some mixed waste being stored, it is often necessary that these standard 208-liter containers be modified.

This modification ensures that the containers are specially shielded to be compliant with ALARA criteria. These specially designed shielded containers are packaged to contain anywhere from 3.79 liters to 53 liters of waste depending on the amount of shielding required. The solid waste typically is packed in individual 3.79-liter to 4.73-liter containers before placement in the 208-liter shielded container. The shielding is accomplished by surrounding the small containers with concrete, lead, or other materials.

C.1.2 Container Management Practices

Management practices and procedures for containers of dangerous waste ensure the safe receipt, handling, preparation for transfer, and transportation of the waste in compliance with requirements of this permit.

Practices utilized at all 325 HWTUs units will include:

- All containers will be inspected for integrity, closure, and proper labeling per Addendum B, Waste Analysis Plan, prior to acceptance for storage at any unit.
- Whenever waste is being handled, all personnel involved will have access to the emergency communications devices described in Addendum F, Section F.1.1.1. [WAC 173-303-340(2)(a)]
- If just one person is in the unit during operations, they will have immediate access to the fire alarm and/or telephone system to summon external emergency assistance as described in Addendum F, Section F.1.1.2. [WAC 173-303-340(2)(b)]
- If a container holding dangerous waste is not in good condition (e.g. severe rusting, apparent structural defects) or if it begins to leak, the waste will be transferred to a container that is in good condition or managed in another way that complies with WAC 173-303 and this Permit. Leaks and spills will be addressed in accordance with the applicable provisions of the Contingency Plan, Addendum J. [WAC 173-303-630(2)]
- All containers will be labeled while in storage with major risk labeling as described in Section C.1.3.
- Waste will be maintained in containers that are compatible with the waste stored. [WAC 173-303-630(4)]
- Waste containers will be kept closed except when adding or removing waste, or when performing visual verification or sampling per Addendum B, or for performing waste treatment in containers. [WAC 173-303-630(5)(a), WAC 173-303-300(5)]
- Containers will not be opened, handled, and stored in a manner which may rupture the container or cause it to leak. [WAC 173-303-630(5)(b)]
- Aisles between rows of containers greater than 10 gallon capacity will be at least thirty inches wide, or to meet other applicable requirements, whichever is greater. No row of containers greater than 10 gallon capacity will be more than two containers wide. [WAC 173-303-630(5)(c)]
- Use of personnel trained in accordance with the 325 HWTUs Training Plan, as described in Addendum G.
- A system of daily and weekly container inspection, as described in Addendum I.
- Use of secondary containment as described in Sections C.1.4 through C.1.9.
- Management of ignitable or reactive waste in accordance with Section C.1.10.
- Management of incompatible wastes in accordance with Section C.1.11.

The following sections describe the unit-specific container management practices used. Table C.1 lists the typical containers used in the 325 HWTUs.

C.1.2.1 Hazardous Waste Treatment Unit Container Management Practices

Waste received for storage and treatment from outside Rooms 520, 524 and 528 is either picked up by HWTU personnel or moved to Rooms 520, 524 and 528 in containers suitable for the waste.

Depending on the container weight, size or number of containers to be moved, container(s) of dangerous waste are hand carried or moved on a platform or handcart, as appropriate, to Rooms 520, 524 or 528. 325 HWTUs staff moves the dangerous containers, keeping incompatible wastes separated.

Container Handling

All flammable cabinets containing dangerous waste are maintained with a minimum of 76 centimeters of aisle space in front of the doors. In room 520, the walk-in fume hood containing the 208-liter containers is designed to hold four 208-liter containers and has over 76 centimeters of aisle space; the containers are not stacked in the hood. In room 524, the walk-in fume hood containing the 208-liter containers is designed to hold two 208-liter containers and has over 76 centimeters of aisle space in front of the doors; the containers are not stacked in the hood.

C.1.2.2 Shielded Analytical Laboratory Container Management Practices

In-cell containers will be stacked no more than four high and labels will not be obscured.

Container Handling

All container handling in the hot cells must be performed remotely with manipulators. Waste samples managed in the SAL enter the cells through rotating transfer wheels located in the back walls of cells 1, 2, and 6 and through a 17.8-centimeter borehole in the back wall of cell 1. After analysis of the sample and necessary confirmation of results, compatible solid waste samples are consolidated into appropriate size containers often referred to as 'paint cans' and usually stored in cell 1. However, any of the cells can be used for storage of waste during operations.

After evaluation for treatment and the subsequent treatment, liquid waste is either transferred to the SAL tank (discussed in §C.2), prepared for disposal through stabilization, or absorbed onto appropriate material as necessary to meet the anticipated final disposal unit waste acceptance criteria. The waste is repackaged into shielded 208-liter containers and stored in the back face area of the SAL or elsewhere in the 325 HWTUs.

C.1.2.3 Cask Handling Area, Truck Lock, and 3714 Pad Container Management Practices

Cabinets used for storage of smaller containers in the Cask Handling Area and the Truck Lock will maintain a minimum of 76 centimeters of aisle space in front of the doors.

C.1.3 Container Labeling

Once the material has been designated as a dangerous waste, all containers are marked and/or labeled to describe the content of the container as required by WAC 173-303-395 and WAC 173-303-630(3). Containers also are marked with a unique identifying number assigned by the generating unit. All containers used for transfer of dangerous waste are prepared for transport in accordance with WAC 173-303-190. Major risk labels incompatible with DOT labeling will be removed or obliterated during staging prior to shipment. [WAC 173-303-630(3), WAC 173-303-280(1) referencing WAC 173-303-190(2)]

C.1.4 Containment Requirements for Storing Containers

A description of secondary containment system design and operation is provided for the 325 HWTUs in this section.

C.1.4.1 Secondary Containment System Design and Operation for the Hazardous Waste Treatment Unit

The secondary containment system for the HWTU has three primary components: UL or FM-approved storage cabinets, individual secondary containment devices, and the firewater containment system (Figure C.1).

Liquid dangerous waste and other waste requiring secondary containment in containers not exceeding the secondary containment capacity of the cabinet is stored in Rooms 520, 524, and 528 in storage cabinets. The secondary containment capacity of the cabinets is documented in the Hanford Facility Operating Record, 325 HWTUs File, and the quantity of waste stored in the cabinet or the capacity of the largest container in the cabinet will be limited by that capacity. The containers are selected as described in Section C.1.1.1 and are kept closed except when waste is being added or withdrawn. Ignitable and reactive waste is managed in accordance with WAC 173-303-395(1)(a) and the Uniform Building Code (UBC) (ICBO 1991) (Note: The UBC references requirements of the Uniform Fire Code, or UFC).

Larger waste containers that contain bulk liquids are stored inside Department of Transportation (DOT) approved containers providing secondary containment, or managed on spill containment pallets. For compatible wastes consolidated into lab-pack containers, the DOT approved outer container serves as secondary containment – such outer containers will be stored directly on the floor. Containers holding waste not subject to containment system requirements pursuant to WAC 173-303-630(7)(c) will be stored on the floor.

Each cabinet is clearly marked as containing either flammable or corrosive waste.

Prior to acceptance at the unit, liquid "bulk" containers (i.e. containing free liquids) which will not be stored in cabinets will be evaluated to determine compatibility with any other "bulk" containers currently in storage in Rooms 520 or 528. If incompatible (as determined by the Waste Analysis Plan), the incompatible liquid wastes will be placed within drip pans or similar secondary containment devices complying with WAC 173-303-630(7)(a). This is intended to prevent incompatible materials from mixing in the fire water tank secondary containment system. Containers from 65 to 328 liters (17 to 85 gallons) capacity holding only wastes that do not contain free liquids, do not exhibit either the characteristic of ignitability or reactivity as described in WAC 173-303-090(5) or (7), and are not designated as F020, F021, F022, F023, F026, or F027 will be stored in DOT approved drums on the floor within the unit. Labpacks are considered not to require further secondary containment and will also be stored directly on the floor.

Rooms 520 and 528 are located on the main floor of the 325 Building and are constructed of concrete. The concrete floors of both rooms have been equipped with a heat-sealed seamless chemical-resistant polypropylene coating that covers the entire floor area of both rooms and laps approximately 10 centimeters up all of the outside walls of each room. The coated floor is capable of containing minor spills and leaks of liquid mixed waste, and prevents migration of spilled waste from one room to another.

Major spills or leaks of liquid mixed waste flow into the firewater containment system. The firewater containment system consists of floor trenches located at each entrance to 520 and 528 and the firewater containment tank located in the basement of the building. The system is designed to collect the fire-suppression water in the event that the automatic sprinkler system was activated. The location of the trenches is shown in Figure C.1.

The floor trenches located under the double doors on the west side of Rooms 520 and 528 are approximately 20 centimeters wide, 46 centimeters deep and 1.91 meters long. The floor trench located under the single south door of Room 520 is approximately 20 centimeters wide, 46 centimeters deep, and 1.5 meters long. The floor trench located under the single southwest door of Room 528 is 20 centimeters wide, 61 centimeters deep, and 1.5 meters long. The trenches extend completely across the entrance of each room so that liquids do not flow out through a doorway. The trenches are constructed of 14-gauge stainless steel and are equipped with a steel grate cover. All seams are welded to ensure integrity. Trenches under the double doors are equipped with two drains in the bottom, and trenches located under single doors are equipped with one drain to allow liquid to drain from the trench through 15-centimeter-diameter carbon steel piping to the firewater containment tank.

The firewater containment tank is located beneath Room 520 in the basement of the 325 Building. The rectangular tank has dimensions of 1.65 meters by 2.25 meters by 1.92 meters and a capacity of 22,710 liters. The sides and floor of the tank are constructed of epoxy-coated carbon steel plate.

The steel sides and floor provide support for the chemical-resistant polypropylene liner. The tank is secured to the concrete floor of the 325 Building basement with 1.3-centimeter bolts at 1.82-meter intervals.

The possibility of mixing incompatible waste in the containment system is minimized since the number of containers open at one time is limited to those in process (waste not in process is stored in closed containers). As noted above, independent secondary containment will be provided for bulk liquid wastes which are incompatible with any other bulk liquid wastes in storage. In addition, the very large volume of any firewater flow would dilute waste and would minimize the possibility of adverse reactions.

C.1.4.2 Secondary Containment System Design and Operation for the Shielded Analytical Laboratory

The secondary containment in the SAL is divided into three systems: the six hot cells, the front face (Room 201), and the back face area (Rooms 200, 202, and 203). Figure C.2 provides a first floor plan view depicting these three areas.

The secondary containment for the six hot cells consists of the stainless steel base of the cell. All waste requiring it is stored in secondary containment consisting of larger containers (e.g. "paint cans" as noted in Section C.1.2.2) and/or pans/trays.

The secondary containment system for liquids in the back face of the SAL consists of larger containers capable of holding at least 100% of the contents and/or pans/trays. Waste is packaged in containers (e.g., paint cans, bottles, and bags) before removal from the hot cells. Once removed from the hot cells, the containers are placed into larger containers to provide secondary containment. Some containers are placed in shielded cubicles in Room 202 or in the glove boxes in Room 203 depending on container dose rates. The location of the cubicles and glove boxes is shown in Figure C.2. If any bulk liquid waste is stored in the back face area, it is provided with compliant secondary containment per WAC 173-303-630(7)(a). Labpacks are considered not to require further secondary containment.

The secondary containment system for the front face of the SAL, which is minimally used to store mixed waste (near the north end away from the manipulator area), is similar to the system for the back face. Containers holding liquid dangerous waste are placed into larger containers to provide secondary containment.

C.1.4.3 Secondary Containment System Design and Operation for the Cask Handling Area and the Truck Lock

Liquid dangerous waste and other waste requiring secondary containment in containers not exceeding the secondary containment capacity of the cabinet is stored in Rooms 603, 604A, and 610 in storage cabinets. The secondary containment capacity of the cabinets is documented in the Hanford Facility Operating Record, 325 HWTUs File, and the quantity of waste stored in the cabinet or the capacity of the largest container in the cabinet will be limited by that capacity. The containers are selected as described in Section C.1.1.1 and are kept closed except when waste is being added or withdrawn. Ignitable and reactive waste is managed in accordance with WAC 173-303-395(1)(a) and the International Fire Code.

Larger waste containers that contain bulk liquids are stored inside DOT approved containers providing secondary containment, or managed on spill containment pallets or drip pans. For compatible wastes consolidated into lab-pack containers, the DOT approved outer container serves as secondary containment – such outer containers will be stored directly on the floor. Containers holding waste not subject to containment system requirements pursuant to WAC 173-303-630(7)(c) will be stored on the floor.

Each cabinet is clearly marked as containing either flammable or corrosive waste.

Prior to acceptance at the unit, liquid "bulk" containers (i.e. containing free liquids) which will not be stored in cabinets will be evaluated to determine compatibility with any other "bulk" containers currently in storage in Rooms 603, 604A, or 610.

If incompatible (as determined by the Waste Analysis Plan), the incompatible liquid wastes will be placed within drip pans or similar secondary containment devices complying with WAC 173-303-630(7)(a). This is intended to prevent incompatible materials from mixing. Containers larger than 65 liters (17 gallons) capacity holding only wastes that do not contain free liquids, do not exhibit either the characteristic of ignitability or reactivity as described in WAC 173-303-090(5) or (7), and are not designated as F020, F021, F022, F023, F026, or F027 will be stored in DOT approved drums on the floor within the unit. Labpacks are considered not to require further secondary containment and will also be stored directly on the floor.

The Cask Handling Area and Truck Lock floors are made of concrete and are coated with an epoxy paint to prevent spills and leaks from penetrating the concrete.

C.1.4.4 Secondary Containment System Design and Operation for the 3714 Pad

The 3714 Pad is made of concrete and is not coated. Unimproved adjacent soil areas may also be used for storage. Waste stored at the 3714 Pad unit must therefore:

- Not contain free liquids.
- Not exhibit the characteristic of ignitability or reactivity.
- Not designate as F020, F021, F022, F023, F026, or F027.

For compatible wastes consolidated into lab-pack containers, the DOT approved outer container serves as secondary containment – such outer containers will be stored directly on the ground/pad.

Such waste is exempt from the secondary containment requirements of WAC 173-303-630(7) as long as the waste is elevated or otherwise protected from contact with accumulated liquids. This will be accomplished via use of pallets or other devices.

C.1.5 Structural Integrity of Base

A description of the requirements for base or liner to contain liquids is provided in the following sections.

C.1.5.1 Requirements for Base or Liner to Contain Liquids in the Hazardous Waste Treatment Unit

The floors in Rooms 520 and 528 have been equipped with a chemical-resistant polypropylene coating. All seams in the coating were finished by heat welding to ensure the integrity of the coating. The coating currently is free of cracks, gaps, and will be maintained that way throughout the life of the HWTU. The condition of the floor is inspected weekly as part of the inspection program (Addendum I). Floor coating assessment is carried out whenever the floor coating is observed to be chipped, bubbled up, scraped, or otherwise damaged in a manner that would impact the ability of the coating to contain spilled materials. Minor nicks and small chips resulting from normal operations are repaired periodically.

The floor coating holds spilled liquid until the liquid is cleaned up, or enters the drains in each room. Once the liquid has entered the drains, the liquid drains into the firewater containment tank in the basement, where the liquid is stored pending chemical analysis and treatment and/or disposal.

The base of the HWTU floors consists of 14.2 centimeter, reinforced, poured concrete slabs with no cracks or gaps. The concrete is mixed in accordance with ASTM 094, Section 5.3, Alternate 2, and is finished with a smooth troweled surface. The concrete base has a load capacity of 976 kilograms per square meter.

The floor trenches that prevent liquids from migrating from rooms 520 and 528 are constructed of 14-gauge stainless steel. All seams are welded and the connections with the drains are tight. The stainless steel is compatible with and resistant to the liquid mixed waste managed in the HWTU.

C.1.5.2 Requirements for Base or Liner to Contain Liquids in the Shielded Analytical Laboratory

The base of the floor for the six hot cells consists of a 0.48-centimeter layer of stainless steel formed on top of poured concrete and has no cracks or gaps. The stainless steel base is compatible with most of the waste generated in the hot cells. The exceptions are waste containing hydrofluoric acid and high concentrations of hydrochloric acids. This waste is stored in individual secondary containment to prevent contact of the waste with the stainless steel in the event that a primary waste container was to fail. Because the volumes of waste generated and stored are small and the hot cell floors are not sloped, waste spilled during waste handling activities probably would remain localized and be cleaned up expeditiously to ensure that no damage occurs to the stainless steel. In order to avoid spillage reaching the stainless steel tank serving the hot cells, separate secondary containment is provided for waste stored in the six cells as required by WAC 173-303-630(7). Liner and base requirements for the SAL tank are discussed in §C.2.

The bases of the back face and front face of the SAL consist of a 15.2 -centimeter, reinforced, poured concrete slabs with no cracks or gaps. The concrete base has a load capacity of 976 kilograms per square meter. All waste containers requiring secondary containment stored in Rooms 200 and 201 (back and front face of SAL respectively) are maintained in individual secondary containment. In addition, the base in Room 201 is topped with a seamless chemical resistant polypropylene coating. Rooms 202 and 203 are topped with epoxy-based paint. The Room 200 concrete floor has epoxy sealant applied to a trap door in the floor that enables transfer of equipment between Rooms 200 and 32. The airflow between these rooms is from Room 200 to Room 32 due to positive air pressure in Room 200.

C.1.5.3 Requirements for Base or Liner to Contain Liquids in the Cask Handling Area and the Truck Lock

The bases of the Cask Handling Area and the Truck Lock consist of a 15.2 -centimeter, reinforced, poured concrete slabs with no cracks or gaps. The concrete base has a load capacity of 976 kilograms per square meter. The Room 603, 604A, and 610 concrete floors are painted with an epoxy-based paint for ease of recovery of spilled materials and to prevent inadvertent contamination of the underlying concrete. The floors are not sloped, but the areas are large enough to allow prompt recovery of most spills resulting from normal handling. Liquids stored in this area will be provided with individual secondary containment.

C.1.5.4 Requirements for Base or Liner to Contain Liquids at the 3714 Pad

Not applicable. The concrete pad is serviceable but is not coated and not relied upon for integrity. In order to utilize the exemption for secondary containment at WAC 173-303-630(7)(c), containers stored at the 3714 Pad will be kept elevated to avoid contact with liquids (e.g. precipitation).

C.1.6 Containment System Drainage

A description of the containment system drainage is provided in this section.

C.1.6.1 Containment System Drainage for the Hazardous Waste Treatment Unit

The floors in Rooms 520 and 528 are not sloped. Small spills of liquid probably will collect in the cabinet and remain in a localized area until the spills are cleaned up. Containers of dangerous waste are stored in drums, on shelves within open-faced hoods, or within flammable or corrosive storage-cabinets to prevent the containers from contacting spilled materials. Large spills of liquid material would spread laterally across the flat surface of the floor. The flow of the spilled liquid would be stopped by an outside wall(s) of the room or by one of the trenches protecting the entrances to the room. The lower 10 centimeters of the outside walls of the rooms are covered with the same chemical-resistant coating as that on the floor to prevent spills from migrating through the walls.

The floor in Room 524 is not sloped. All liquid waste in this room will be stored in secondary containment. The secondary containment for liquids will consist of steel storage cabinets with secondary containment, DOT approved containers or one of the stainless steel 'container pans'. Any container holding waste not subject to containment system requirements will be stored on the floor.

The floor drains across each exit in Rooms 520 and 528 drain spills to an emergency firewater containment tank (22,710-liter capacity) located in the basement of the 325 Building. The tank captures all drained liquid, where the liquid is stored until sampling and analysis indicates a proper treatment and/or disposal method.

C.1.6.2 Containment System Drainage for the Shielded Analytical Laboratory

The stainless steel base of the hot cell is not sloped. Because of the small volume of waste that is handled, small spills probably would remain in a localized area until the spills are cleaned up. As a result, all containers of liquid mixed waste are stored within secondary containment to prevent contact with accumulated liquids.

The bases of the front and back faces are not sloped. Containers in these areas are stored within secondary containment and off the base surface to prevent spilled liquids from contacting the containers.

C.1.6.3 Containment System Drainage for the Cask Handling Area, the Truck Lock, and the 3714 Pad

The bases of the Cask Handling Area, the Truck Lock and the 3714 Pad are not sloped. Containers in these areas will be stored within secondary containment and/or elevated off the base surface to prevent liquids from contacting the containers.

C.1.7 Containment System Capacity

A description of the containment system capacity for the 325 HWTUs is provided in the following sections.

C.1.7.1 Containment System Capacity for the Hazardous Waste Treatment Unit

The maximum combined total volume of all containers of dangerous waste stored in the HWTU is 12,000 liters. The largest mixed waste storage container is a 322-liter container. The firewater containment tank provides secondary containment for larger containers stored in Rooms 520 and 528. The capacity of the firewater containment tank is 22,710 liters; therefore, the containment system is more than adequate to contain either 10 percent of the total volume of waste (2,840 liters) or the entire volume of the largest container (322 liters).

C.1.7.2 Containment System Capacity for the Shielded Analytical Laboratory

The total amount of liquid to be stored in the hot cells is governed by the area constraint of the cells. Typically, the largest amount of liquid waste to be stored in the hot cells at one time is 75.8 liters. In-cell secondary containment as described in Section C.1.4.2 is provided for all stored wastes requiring it per WAC 173-303-630(7).

Liquid waste stored in Room 201 is stored in the fume hood. The waste is stored in glass or plastic bottles that are placed in individual plastic containers of a size that is sufficient to hold all of the contents of the inner vessel. The quantity of liquid waste stored in the hood is governed by the area constraint in the hood. Similarly, liquid waste stored in Room 202 is stored in glass or plastic bottles that are each placed in individual secondary containment.

The floors of the front face and back face are constructed of concrete, and the rear face floor is coated with an epoxy-based paint. The rear face floor in Rooms 202 and 203 is covered with epoxy paint. Because of the small quantities of liquid stored in the front face and back face, any spill that is not contained by the plastic overpack probably would remain on the floor in a localized area until cleaned.

C.1.7.3 Containment System Capacity for the Cask Handling Area

Liquid waste stored in the fume hood in Room 604A is stored in glass or plastic bottles that are placed in individual containers of a size that is sufficient to hold all of the contents of the inner vessel. The quantity of liquid waste stored in the hood is governed by the area constraint in the hood.

The floors in Room 603 and 604A are constructed of concrete and are coated with an epoxy-based paint. Because of the small quantities of liquid stored in the Cask Handling Area, any spill that is not contained by the overpack or spill pallet would remain on the floor in a localized area until cleaned.

C.1.7.4 Containment System Capacity for the Truck Lock

The floor in Room 610 is constructed of concrete and is coated with an epoxy-based paint. Because liquids are not expected to be stored in the Truck Lock, any spill that is not contained by the container or secondary containment device would remain on the floor in a localized area until cleaned.

C.1.7.5 Containment System Capacity for the 3714 Pad

Not applicable. The concrete pad is serviceable but is not coated and not relied upon for integrity. In order to utilize the exemption for secondary containment at WAC 173-303-630(7)(c), containers stored at the 3714 Pad will be kept elevated to avoid contact with liquids (e.g. precipitation).

C.1.8 Control of Run-on

Run-on control for the 325 HWTUs is described in the following sections.

C.1.8.1 Control of Run-on for the Hazardous Waste Treatment Unit

The 325 Building mitigates the possibility of run-on for the HWTU. The level of the main floor is approximately 1.52 meters above the level of the ground surface around the building.

C.1.8.2 Control of Run-on for the Shielded Analytical Lab

The 325 Building mitigates the possibility of run-on for the SAL. The level of the main floor is approximately 1.52 meters above the level of the ground surface around the building.

C.1.8.3 Control of Run-on for the Cask Handling Area

The 325 Building mitigates the possibility of run-on for the Cask Handling Area. The level of the main floor is approximately 1.52 meters above the level of the ground surface around the building.

C.1.8.4 Control of Run-on for the Truck Lock

The Truck Lock is part of the 325 Building and is built up from the surrounding soil surface. The access ramp to the Truck Lock slopes away from the Truck Lock to the east. Rainfall intrusion is unlikely and would be extremely minor and short-lived.

C.1.8.5 Control of Run-on for the 3714 Pad

Not applicable. The 3714 Pad unit is surrounded by unimproved soil and the surrounding area is leveled to avoid run-on/run-off. In order to utilize the exemption for secondary containment at WAC 173-303-630(7)(c), containers stored at the 3714 Pad will be kept elevated to avoid contact with liquids (e.g. precipitation) that may collect temporarily.

C.1.9 Removal of Liquids from Containment System

The removal of liquids from the containment system for the 325 HWTUs is described in the following sections.

C.1.9.1 Removal of Liquids from the Hazardous Waste Treatment Unit Containment System

On discovery of liquid accumulation in the containment resulting from a spill or other release, the Building Emergency Director (BED) must be contacted in accordance with the contingency plan (Addendum J). The BED may determine that the contingency plan should be implemented. If the incident is minor, and if the BED approves, removal of the liquid commences immediately following a safety evaluation. Appropriate protective clothing and respiratory protection will be worn during removal activities; an industrial hygienist could be contacted to determine appropriate personal protection requirements and any other safety requirements that might be required, such as chemical testing or air monitoring. In addition, ventilation of the spill area might be performed if it is determined to be safe and if appropriate monitoring of the air discharge(s) is performed.

Liquid spills are contained within the Room 520, 524 or 528 storage cabinets, floor, or within the firewater containment tank. Localized spills of liquids to the floor of the HWTU rooms are absorbed with an appropriate absorbent (after the appropriate chemical reaction has occurred to neutralize reactivity in the case of reactive waste or after neutralization has occurred in the case of corrosive materials). The absorbent material is recovered and placed in an appropriate container. The floor, cabinets, and any other impacted containers can be cleaned by dry rags, soap and water, or a compatible solvent, if necessary, to remove external contamination. Contaminated rags and other cleanup material are disposed of in an appropriate manner. If spilled materials in the HWTU reach the firewater containment tank, the material will be held in place until chemical analysis indicates an appropriate treatment and/or disposal method. The waste analysis procedures and analytical methods used to designate the spilled materials are documented in Addendum B, Waste Analysis Plan. The tank is designed to allow easy access for material sampling. Depending on the results of the analysis, the collected spill material will be recovered and disposed of at an appropriate facility.

C.1.9.2 Removal of Liquids from the Shielded Analytical Laboratory Containment System

On discovery of liquid accumulation in the hot cells or in the back or front face containment resulting from a spill or other release, the BED must be contacted in accordance with the contingency plan (Addendum J). The BED could determine that the contingency plan should be implemented. If the incident is minor, and if the BED approves, removal of the liquid commences immediately following a safety evaluation. For in-cell spills, hot cell technicians will clean up the spill using sorbents or wipers (possibly including neutralization of a spilled acid or base) and the waste will be submitted for disposal in accordance with Addendum B. For liquids discovered in the back or front face areas, appropriate protective clothing and respiratory protection will be worn during removal activities; an industrial hygienist could be contacted to determine appropriate personal protection requirements and any other safety requirements that might be required, such as chemical testing or air monitoring. In addition, ventilation of the spill area could be performed if it is determined to be safe and if appropriate monitoring of the air discharge(s) is performed.

Localized spills of liquids to the floor of the SAL will be absorbed with an appropriate absorbent (after the appropriate chemical reaction to neutralize reactivity has occurred in the case of reactive waste or after neutralization has occurred in the case of corrosive materials). The absorbent material will be recovered and placed in an appropriate container. The floor, cabinets, and any other impacted containers can be cleaned by dry rags, soap and water, or a compatible solvent, if necessary, to remove external contamination. Contaminated rags and other cleanup material will be disposed of in accordance with applicable regulations and PNNL internal waste management procedures.

C.1.9.3 Removal of Liquids from the Cask Handling Area and Truck Lock Containment Systems

On discovery of liquid accumulation in the Cask Handling Area or the Truck Lock resulting from a spill or other release, the BED must be contacted in accordance with the contingency plan (Addendum J).

The BED determines if the contingency plan should be implemented. If the incident is minor, and if the BED approves, removal of any liquid commences immediately following a safety evaluation. Appropriate protective clothing and respiratory protection will be worn during removal activities; an industrial hygienist could be contacted to determine appropriate personal protection requirements and any other safety requirements that might be required, such as chemical testing or air monitoring. In addition, ventilation of the spill area could be performed if it is determined to be safe and if appropriate monitoring of the air discharge(s) is performed.

Localized spills of liquids to the floor will be absorbed with an appropriate absorbent (after the appropriate chemical reaction to neutralize reactivity has occurred in the case of reactive waste or after neutralization has occurred in the case of corrosive materials). The absorbent material will be recovered and placed in an appropriate container. The floor, cabinets, and any other impacted containers can be cleaned by dry rags, soap and water, or a compatible solvent, if necessary, to remove external contamination. Contaminated rags and other cleanup material will be disposed of in accordance with applicable regulations and PNNL internal waste management procedures.

C.1.9.4 Removal of Liquids from the 3714 Pad Containment System

Not applicable. The 3714 Pad unit will not be utilized to store containers holding free liquids. In order to utilize the exemption for secondary containment at WAC 173-303-630(7)(c), containers stored at the 3714 Pad will be kept elevated to avoid contact with liquids (e.g. precipitation) that may collect temporarily.

C.1.10 Management of Ignitable and Reactive Waste in Containers

Management of ignitable and reactive waste in containers within the 325 HWTUs is described in the following sections.

C.1.10.1 Management of Ignitable and Reactive Waste in Containers in the Hazardous Waste Treatment Units

Ignitable and reactive wastes are stored in compliance with Article 50 of the International Fire Code. Containers of ignitable and reactive waste are stored in individual flammable storage cabinets within the HWTUs.

C.1.10.2 Management of Ignitable and Reactive Waste in Containers in the Shielded Analytical Laboratory

Ignitable and reactive wastes are stored in compliance with Article 50 of the International Fire Code. Containers of ignitable and reactive waste are stored in individual flammable storage cabinets within the SAL.

C.1.10.3 Management of Ignitable and Reactive Waste in Containers in the Cask Handling Area and Truck Lock

Ignitable and reactive wastes are stored in compliance with Article 50 of the International Fire Code. Containers of ignitable and reactive waste are stored in individual flammable storage cabinets within the Cask Handling Area and Truck Lock, or in another manner that complies with Article 50.

C.1.10.4 Management of Ignitable and Reactive Waste in Containers at the 3714 Pad

Ignitable and reactive wastes are stored in compliance with Article 50 of the International Fire Code. Since there is no automated fire suppression system at the 3714 Pad, only exempt quantities of ignitable or reactive waste will be stored at the 3714 Pad.

C.1.11 Management of Incompatible Waste in Containers

The prevention of reaction of incompatible waste in containers for the 325 HWTUs is discussed in the following sections.

C.1.11.1 Management of Incompatible Waste in Containers at the Hazardous Waste Treatment Unit

Addendum F, §F.3.2, describes the methods used to determine the compatibility of dangerous waste so that incompatible waste is not stored together. Incompatible waste is never placed in the same container or in unwashed containers that previously held incompatible waste. Operations are conducted such that extreme heat or pressure, fire or explosions, or violent reactions do not occur. Uncontrolled toxic mists, fumes, dust, or gases in sufficient quantities to threaten human health or the environment are not produced; uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion are not produced; and damage to the container does not occur. Information on the hazard classification of waste accepted by the HWTU is documented by the generating unit, which is carefully reviewed by HWTU personnel before waste acceptance. Mixing of incompatible waste is prevented through waste segregation and storage. As the containers received in the HWTU usually are smaller than 19 liters, the most common segregation is performed by storage of incompatible hazard classes in separate chemical storage cabinets. Guidance for the segregation is provided in Addendum F, §F.3.2.

Minimum aisle space is maintained according to the International Fire Code to separate incompatible waste, and the aisle space requirements of WAC 173-303-630(5) and (9), and WAC 173-303-340(3). The possibility of adverse reaction is minimized (see Addendum F, §F.3.1 for methods used to prevent sources of ignition).

C.1.11.2 Management of Incompatible Waste in Containers at the Shielded Analytical Laboratory

Incompatible waste in the SAL hot cells is managed by placing primary containers into a second container or tray capable of managing any leak or spilled material. Incompatible waste is never placed in the same container, second container or tray, or in an unwashed container that previously held incompatible waste.

Treatment operations are conducted to ensure that extreme heat or pressure, fire, or explosive or violent reactions do not occur. Potential releases would be controlled by the ventilation system that exhausts through two high-efficiency particulate air (HEPA) filters set in series, and due to the limited amount of waste in the SAL. These HEPA filters are part of the building exhaust system, which is maintained and inspected routinely in accordance with PNNL preventive maintenance standards. Emissions from the 325 Building stack, and control devices for those emissions, are regulated by the Washington State Department of Health pursuant to Chapter 246-247 WAC, and the Washington State Department of Ecology (Ecology) pursuant to Chapters 173-400, 173-401, and 173-460 WAC, respectively. Air-pressure barriers for containment control are achieved by supplying air from areas of least contamination (i.e., offices) to areas of higher contamination (i.e., cells). These systems ensure proper emission flow through the HEPA filters.

Because waste normally is treated in the SAL hot cells, human exposure to the remote potential of mixing incompatible waste or reactive waste is minimal. Waste generated and treated within the SAL hot cells is stored within separate secondary containers, which eliminates the potential for combining incompatible waste. Waste stored in the front or back face of the SAL is packaged by hazard classes for transfer or is segregated in separate secondary containment.

C.1.11.3 Management of Incompatible Waste in Containers at the Cask Handling Area

Addendum F, §F.3.2, describes the methods used to determine the compatibility of dangerous waste so that incompatible waste is not stored together. Incompatible waste is never placed in the same container or in unwashed containers that previously held incompatible waste. Operations are conducted such that extreme heat or pressure, fire or explosions, or violent reactions do not occur. Uncontrolled toxic mists, fumes, dust, or gases in sufficient quantities to threaten human health or the environment are not produced; uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion are not produced; and damage to the container does not occur.

Information on the hazard classification of waste accepted is documented by the generating unit, which is carefully reviewed by 325 HWTUs personnel before waste acceptance. Mixing of incompatible waste is prevented through waste segregation and storage. Containers smaller than 19 liters is performed by storage of incompatible hazard classes in separate chemical storage cabinets. Larger containers will be stored in individual secondary containment if incompatible waste is present in the Cask Handling Area. Guidance for the segregation is provided in Addendum F, §F.3.2.

Minimum aisle space is maintained according to the International Fire Code to separate incompatible waste, and the aisle space requirements of WAC 173-303-630(5) and (9), and WAC 173-303-340(3). The possibility of adverse reaction is minimized (see Addendum F, §F.3.1 for methods used to prevent sources of ignition).

C.1.11.4 Management of Incompatible Waste in Containers at the Truck Lock and the 3714 Pad

Containers stored in these locations are larger waste containers (30 gallons or larger). Any containers that contain bulk liquids are stored inside DOT approved containers providing secondary containment, or managed on spill containment pallets or drip pans. Incompatibles will be separated and/or protected by individual secondary containment.

C.2 Tank Systems

The following sections describe the management of dangerous waste in the SAL tank system. The tank system consists of the tank; associated piping, valves and pumps; and secondary containment. The tank system is located in Room 32 of the SAL and is used to collect liquid waste generated from the analytical laboratory operations. This SAL tank system is described in §C.2.1 and depicted in Figure C.2.

C.2.1 Shielded Analytical Laboratory Tank System

The SAL is an analytical chemistry laboratory used primarily to prepare and analyze samples for research and development activities and waste characterization. Storage and treatment of dangerous waste in containers also occurs in the SAL. This work is conducted in six inter-connected hot cells. Liquid waste generated during these operations is collected, treated if necessary and may be containerized or drained from the hot cells to the SAL tank located in Room 32 of the basement directly below the hot cells. A stainless steel trough, 15.2 centimeters wide by 7.62 centimeters deep, traverses the front of all six hot cells in which solution is poured. The trough is equipped with stainless steel grating to capture solids during solution pour. The trough collects any liquid waste poured from analytical chemistry operations, mixed waste treatment operations, other chemical and mixed waste stored in the hot cells, and spills or leaks. The liquid waste is transferred through a common stainless steel pipeline that drains into the SAL tank. The waste is treated in the tank, as needed, and batch transferred from the SAL tank to containers for disposal through a pressurized transfer line that leads back into Cell 6 of the SAL. The SAL tank volume is 1,218 liters and has a throughput of 10,000 kilograms per year.

C.2.1.1 Design, Installation, and Assessment of Tank Systems

The following sections discuss the design and installation of the SAL tank and provide information on the integrity assessment.

C.2.1.1.1 Design Requirements

Waste stored in the SAL tank has a pH between 7 and 12. The tank is constructed of 316L stainless steel. This material is compatible with any of the dangerous waste that is discharged to the tank.

The tank system design has been reviewed by an independent, qualified, registered professional engineer to verify that the strength of the material is adequate and that it can withstand the stress of daily operation. The professional engineer evaluation is included in the tank integrity assessment.

The SAL tank is a vertical double-shell tank supported by 3 legs and stands approximately 1.7 meters above the ground. The top head is a 0.95-centimeter-thick flat stainless steel plate.

Both bottom heads are flanged and dished heads (torispherical), and the bottom height is 10.2 centimeters above ground. The inner shell is 107 centimeters outside diameter, the outer shell is 114 centimeters outside diameter, and each shell is 0.8-centimeter-thick stainless steel plate. The tank is located inside a containment pan that has a 203-centimeter diameter and is 51 centimeters high; the total volume of the pan is 1,648 liters. The pan provides for secondary containment of leaks from the tank, piping, and ancillary equipment and instruments located above the tank. Flanged and threaded connections are located within the containment boundary of the pan to capture any leaks that might occur from these connections. Outside the containment area, all connections are welded. There are no outlets, drainage or otherwise, on the bottom or sides of the tank.

Solution enters the tank through a gravity flow, welded drain line piped from the hot cells. The SAL sources that tie into this drainpipe includes: the hot cells, sink drain, hood drain via the sink drain, and floor drain. The cup sink drain and hood drain line is sealed off and is not in use. The drain line also functions as the tank vent that is exhausted by the hot cell exhaust system. A return line of stainless steel is attached to the top of the tank and can be 'jetted' using water pressure to transfer the tank contents back up to Cell 6 of the SAL. A mixer is located on top of the SAL tank to provide agitation of the contents for sampling and washout purposes. Process water also is provided to the tank system for cleanout of the tank and associated piping. The solution is stored in the SAL tank, treated as needed and transferred to containers for final disposal.

The SAL tank is located in a controlled access room and is monitored from two operating panels. The smaller sample panel is located next to the SAL tank, and the second main control panel is located in Room 201, the main operating gallery. The sample panel provides control for activities related to pulling a sample, such as activating the sample pump and controlling process water, and monitoring the liquid level of the tank. The main control panel provides the operators with the ability to monitor and control the entire SAL tank system. The main control panel provides level indication, high, and high-high level annunciation and contains switches for controlling pumps, agitators, valves, etc. The SAL tank is instrumented with three types of level-monitoring devices. Two devices are wired into the annunciator at the main control panel to provide high-level alarms, and one high-level alarm annunciates at the annunciator board in the control room on the third floor. This control room is staffed 24 hours a day, 7 days a week. If a high-alarm situation occurs after normal working hours, operations personnel would be notified immediately by the alarm and would take corrective action according to procedure. The SAL tank system normally is operated on the day shift. Personnel occupy the main operating gallery in Room 201, where the personnel would be alerted to off-normal conditions on the main control panel. A high-level alarm also would deenergize the process water solenoid valves to the closed position on three water lines into the hot cells and on the process water lines to the SAL tank. The containment pan contains a conductivity element that alarms at the main control panel should solution be detected in the pan. Operating procedures require that inspections of the entire system be made daily when in use (Addendum I).

C.2.1.1.2 Integrity Assessments

An independent, qualified, registered professional engineer's tank integrity certification has been completed and is on file in the Hanford Facility Operating Record, 325 HWTUs File.

C.2.1.2 Secondary Containment and Release Detection for Tank Systems

This section describes the secondary containment systems and leak detection systems installed in the SAL.

C.2.1.2.1 Requirements for Tank Systems

The secondary containment system for the SAL Tank in Room 32 consists of two components. The SAL tank is a double-walled vessel and the outer tank provides secondary containment for the inner tank.

However, since the inner tank cannot be easily inspected, the outer tank is considered the "primary containment" and a pan installed under the tank is considered to provide secondary containment for the tank system.

The existing drainpipe from the hot cells to the SAL tank is a single-walled, 5.1-centimeter welded stainless steel pipe. This piping is visually inspected for leaks on a daily basis when the tank system is in use, by means of a remote video system. Flanges in this piping and ancillary equipment are located so that secondary containment is provided by the SAL tank secondary containment pan. The 325 Building provides additional containment. The basement floors are concrete, and any liquid release remains in the immediate area until cleanup. The openings to the drains in the basement are elevated 10.2 centimeters above the floor; thus, any spill would remain in the basement until enough liquid collects to fill the entire basement to a 10.2-centimeter depth. The SAL tank can hold a maximum of 1,218 liters, and the entire contents of the SAL tank would fill an area of only 3.5 meters by 3.5 meters to a depth of 10.2 centimeters. Because the basement is larger than 3.5 meters square, the liquid from the SAL tank would not enter a drain opening. Details of the design, construction, and operation of the secondary containment system are described in the following sections.

C.2.1.2.2 Requirements for Secondary Containment and Leak Detection

The secondary containment has been designed to prevent any migration of waste or accumulated liquid from the tank system to the soil, groundwater, or surface water. The secondary containment system also can detect and collect releases of accumulated liquids. A zoom color television camera surveillance system allows for tank, ancillary equipment, and general Room 32 viewing. The camera, located in Room 32, is equipped with auxiliary lighting and mounted on a remote controlled pan and tilt head. The color monitor and camera controls are housed in a dedicated cabinet in Room 527A. The HWTU will have the option of either keeping the camera/monitor controls in Room 527A or moving it to another location for operational flexibility. By maintaining operational flexibility of where the camera controls are located, the HWTU can meet ALARA (As Low As Reasonably Achievable) requirements and minimize the expense of added HWTU training requirements.

The following is the system description.

Materials of Construction

The tank and components are constructed of 316L stainless steel; this material is compatible with the aqueous waste being discharged to the tank. The waste has a pH between 7 and 12.

Strength of Materials

The system design has been reviewed by an independent, qualified, registered professional engineer to verify that the strength of materials is adequate and that the tank can withstand the stress of daily operation. In addition, pressure relief valves are installed in each line exiting the SAL tank. In the event that there is a blockage in the pipe or tubing, pressure will not build up in the lines. The pressure relief valves are set to 30 psi, which is well below the design strength of stainless steel pipe and tubing. Waste drains back into the SAL tank when a pressure relief valve opens.

Strength of Foundation

The system design has been reviewed by an independent, qualified, registered professional engineer to verify that the strength of the tank mounting and foundation is adequate to withstand the design-basis earthquake (DBE). This ensures that the foundation is capable of providing support to the tank and will resist settlement, compression, or uplift.

Leak Detection System Description

The SAL tank is double walled, and a conductivity probe is installed in the annulus to detect any leak of liquid from the primary containment. If liquid is detected by the probe, alarms are sounded immediately in a local control panel located in Room 32 and in the main control room.

A pan installed beneath the SAL tank provides secondary containment. The containment pan has a conductivity element that alarms at the main control panel if the presence of liquid in the pan is detected. The containment pan has a 203-centimeter diameter and a 51-centimeter height with a containment capacity of 1,648 liters. The containment pan will easily hold the total capacity of the 1,218-liter SAL tank plus any potential process water that might be released.

Removal of Liquids from Secondary Containment

The tank containment, the outer shell of the double-walled vessel, is designed to contain a liquid leak from the inner vessel until provisions can be made to remove the liquid. The liquid might not be removed within 24 hours because of the coordination that must take place in the 325 Building. A tube is installed in the tank annulus, extending to the bottom and is capped at the top. If liquid were detected in the annulus, the liquid could be removed by connecting a tube between the capped fitting and the transfer pump, which would pump out the liquid to appropriate containers.

A delay of greater than 24 hours in removing the liquid from the secondary containment poses no threat to human health or the environment, because the waste continues to be contained in a sealed vessel. In the event that the outer tank should also leak, the containment pan installed beneath the tank provides secondary containment.

C.2.1.2.3 Secondary Containment and Leak Detection Requirements for Ancillary Equipment

Secondary containment for the SAL tank system ancillary equipment is provided by the containment pan below the SAL tank, by double-walled piping for the sample line between the tank and the sample station, and by daily visual inspection during use of the entire system including the existing single-walled piping. Flanged and threaded connections, joints, and other connections are located within the confines of the containment pan. Outside this pan, only double-walled piping and welded piping is allowed. The pumps are magnetic coupling pumps located above the pan. All construction material is stainless steel; for the welded parts, the material is 316L stainless steel. Stainless steel material is compatible with the expected corrosive, dangerous, and mixed waste stored in the SAL tank. The strength and thickness of the piping, equipment supports, and containment pan are designed to onsite standards that take into account seismic requirements for the region and corrosion protection. The entire system is located on an existing basement floor built in the 1960s. The 325 Building has proven over time to be of a sound structural integrity to withstand mild earthquake forces. The containment pan has a liquid element sensor that alarms immediately at the main control panel should any leakage be detected. The containment pan has a 203-centimeter diameter and a 51-centimeter height, or 1,648 liters of capacity. The containment pan will hold the total capacity of the 1,218-liter SAL tank plus any potential process water that also might be released. In the event of an alarm, the process water solenoid valves will become de-energized to the closed position to minimize the loss of additional water.

The 325 Building is staffed or monitored 24 hours a day, 7 days a week. The control system is designed to alarm on any leak/spill or high-level alarm encountered. The personnel responding to the alarm condition will stop or secure the action causing the leak/spill, warn others of the spill, isolate the spill area, and minimize individual contamination and exposure. The spilled or leaked waste will be removed in an expeditious manner according to Addendum J requirements for cleaning up spills and leaks. Any required release reports will be filed according to the requirements of WAC 173-303-640(7).

C.2.1.2.4 Controls and Practices to Prevent Spills and Overflows

The SAL tank system has been designed to provide safe and reliable operation that prevents the system from rupturing, leaking, corroding, or otherwise failing. The tank is provided with redundant-level instrumentation to monitor tank levels. Both capacitance- and conductance-level probes are used for level monitoring and alarming. The tank will alarm on high level and interlock the process water to fail close. The process water is supplied to both the hot cells and the tank system.

The containment pan is equipped with a liquid-sensing element to detect the presence of liquid and alarms at the main control panel if liquid is detected. Normally, liquid is drained to the tank by operators pouring solution into the troughs in the hot cells. This operation is carried out in a 'batch mode'. If this operation sets off a high-level alarm, the operators stop pouring solution into the troughs. Even if this operation caused an alarm condition, no spill is expected, because the tank has sufficient freeboard to hold additional waste solution. The initial level alarm is set at 92 percent of full volume. This provides an allowance of 97 liters.

Trained personnel respond to spills by stopping or securing the action causing the spill, notifying others in the area of the spill, and following the requirements of Addendum J. Measures are in place to inspect the system daily (see Addendum I).

C.2.1.3 Tank Management Practices

Wastes to be introduced to the SAL tank are first profiled and approved in accordance with the Waste Analysis Plan, Addendum B, before introduction. Introduction of liquid waste to the SAL tank is conducted by pouring the waste into the troughs. The troughs tie into the 5.08-centimeter drain header located under the hot cells. This drain header is sloped down to the SAL tank located in Room 32 of the basement. The existing drain header is the only method of introducing mixed waste solutions into this tank. The drain line is fully welded and is constructed of 316L stainless steel material. Because this drain line also serves as the SAL tank vent line, the SAL tank operates at the same pressure as that of the hot cells. The heating, ventilation, and air conditioning operating pressure for the hot cells, and therefore the SAL tank, is -1.27 centimeters water (vacuum). The SAL tank operates at slightly subatmospheric pressure, and no pressure controls are necessary for this tank system.

The SAL tank is fully monitored with tank-level instruments. A main control panel provides level status and high-alarm annunciation. Two control panels are provided with the SAL tank monitoring system. One control panel is located adjacent to the sampling station in Room 32 to control the sampling pump when samples are pulled. A second control panel is located on the operating floor in Room 201, the SAL main operating gallery. Tank status is monitored from the first floor control panel. Because waste solution is generated in a batch mode, waste solution drained to the tank is effectively controlled through operating and administrative procedures in order to prevent high-level-alarm conditions. A safety cutoff system for the tank will shut off all incoming water to the SAL in conjunction with a high-level-alarm condition. A backup tank system was determined to be unnecessary for the SAL operations because of the presence of tank monitoring devices and the use of administrative and operational (batch-processing) controls.

The tank transfer controls provide similar safety features. The SAL tank volume may be transferred to SAL Cell 6 for treatment and/or subsequent storage in containers using a transfer line. As with the drain lines, the transfer line is constructed of single-wall stainless steel piping. All transfer line connections outside the tank's secondary containment system are protected against over pressurization via a pressure-relief valve on the tank set for 19 psig.

C.2.1.4 Marking or Labeling

Due to the ALARA concerns associated with the SAL tank, the tank itself is not labeled. The tank is located in a locked room to comply with ALARA standards. Access points to the room are labeled to meet the requirements of WAC 173-303-395 and WAC 173-303-640(5)(d). The marking of the access points is legible from a distance of 15 meters and identifies the major risks associated with the waste. The label adequately warns employees, emergency response personnel, and the public of the major risks associated with the waste being stored within the tank. The tank also has a written placard identifying important hazard concerns.

C.2.1.5 Ignitable, Reactive, and Incompatible Waste

Many different types of samples and waste materials will be brought to the SAL hot cells for analytical or research activities.

These samples are accompanied by internal PNNL documentation that provides waste characterization information from the sample-generating unit. Chemical characterization provided in these forms is based on previous chemical analysis or process knowledge. The hazard potential includes exposure to mixed waste, corrosive chemicals, and hazardous chemicals. All operations performed in the SAL hot cells are conducted by qualified operators following approved procedures. Typical hot cell analytic processes generate liquid waste that is highly acidic and/or that have a high chloride level. A small quantity of organic waste is generated and segregated prior to treatment or disposal. If heavy metals are present in the liquid waste before neutralization, the metals are precipitated as hydroxides incident to the neutralization and are filtered from the solution. If the chloride content of the liquid is above 0.01 Molar, the chlorides may be removed through silver nitrate precipitation. Therefore, waste solutions are not expected to be ignitable, reactive, or incompatible when transferred to the SAL tank.

C.3 Air Emissions Control

There are no process vents in Operating Unit Group 5 (325 HWTU), so the requirements of WAC 173-303-690 do not apply. Similarly, there is no equipment managing or contacting dangerous or mixed waste with volatile organics above 10 wt%, so the requirements of WAC 173-303-691 do not apply. The SAL and the Cask Handling Area are used solely for the management of mixed waste and is therefore exempt from WAC 173-303-692. Containers stored in the HWTU, Truck Lock, and 3714 Pad will be evaluated for compliance with WAC 173-303-692 as follows.

Compliance with the Subpart CC standards is maintained by utilizing DOT-specification containers for storage, when the container has a design capacity greater than 0.1 m^3 (26.4 gallons). Containers greater than 0.46 m^3 (121 gallons) will not be used in light material service or used for stabilization where the waste being stabilized would be exposed to the atmosphere. Hence Level 1 container standards are the only standards that must be met.

To meet the Level 1 standards, the following standards are observed:

- Opening hazardous waste containers only occurs when adding or removing waste, or for necessary inspection or sampling, after which the container is promptly re-closed.
- Inspection of the closure of hazardous waste containers is checked prior to loading for shipment to the unit as part of the waste acceptance process (Addendum B, Section B.2.1).
- Any waste container greater than 0.1 m3 capacity stored longer than one year is re-inspected at least once every 12 months to check the container for deterioration or damage. Any deterioration or damage is documented and promptly repaired in accordance with 40 CFR 264.1086(c)(4)(iii).

Determination that containers with capacity greater than 0.46 m^3 (121 gallons) are not in "light material service" is provided through the acceptance criteria in the 325 HWTUs waste analysis plan (Addendum B, Section B.1.1.1.2).

Table C.1. Typical Storage Containers Used at the 325 Hazardous Waste Treatment Units

Material of Construction	Waste Capacity
Glass container/bottles	1 milliliter to 3.79 liters
Plastic containers/bottles	1 milliliter to 19 liters
Paint cans	0.47 liters to 4.73 liters
Steel containers	114 liters, 322 liters
Plastic-lined steel containers	114 liters, 208 liters
Steel 'shielded' 208-liter container	Various nominal capacity depending on necessary shielding; 3.79 liters; 53 liters
Overpack containers	322 liters
4x4x8 to 5x5x9 Waste Box	3622-6367 liters

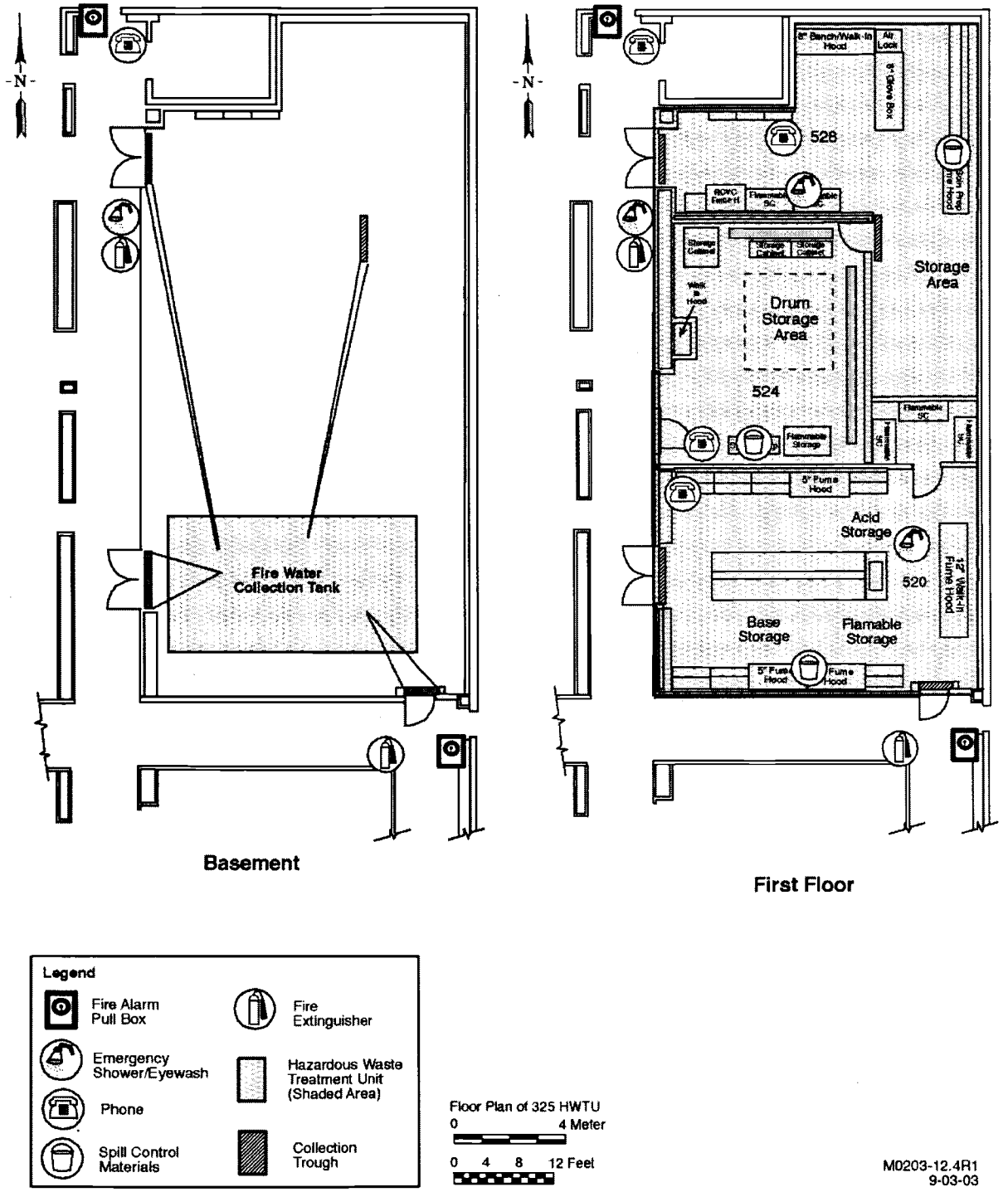

Figure C.1. Hazardous Waste Treatment Unit Secondary Containment System

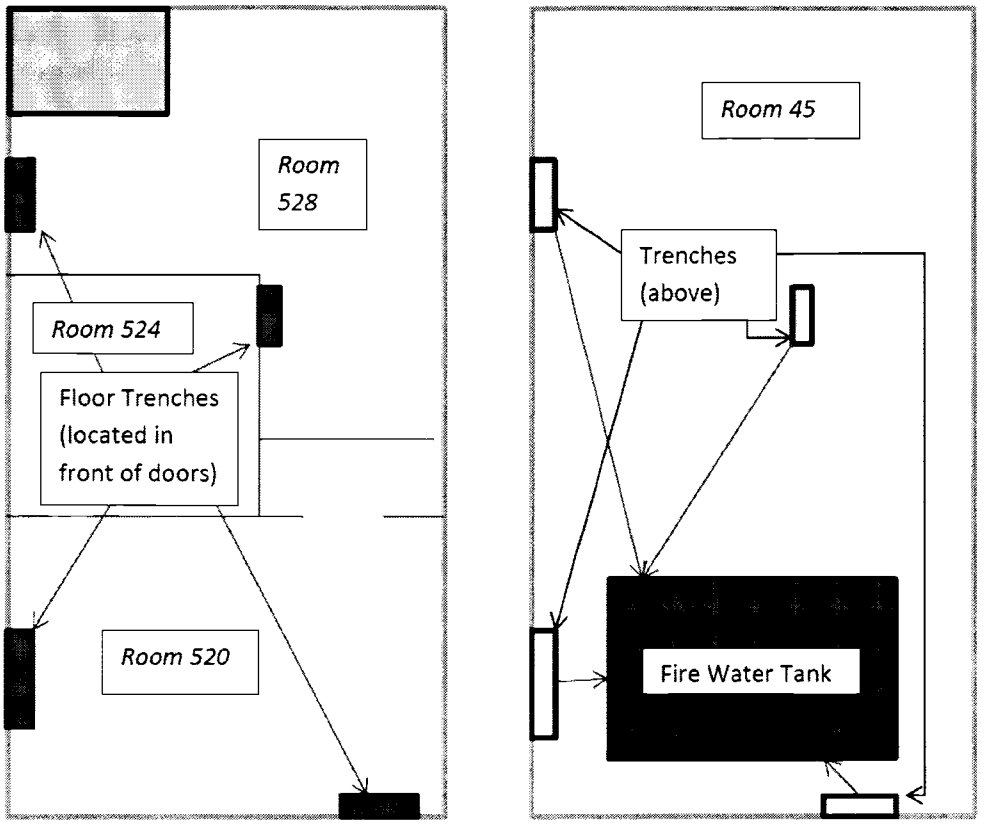

Figure C.2. Hazardous Waste Treatment Unit Secondary Containment System (Continued)

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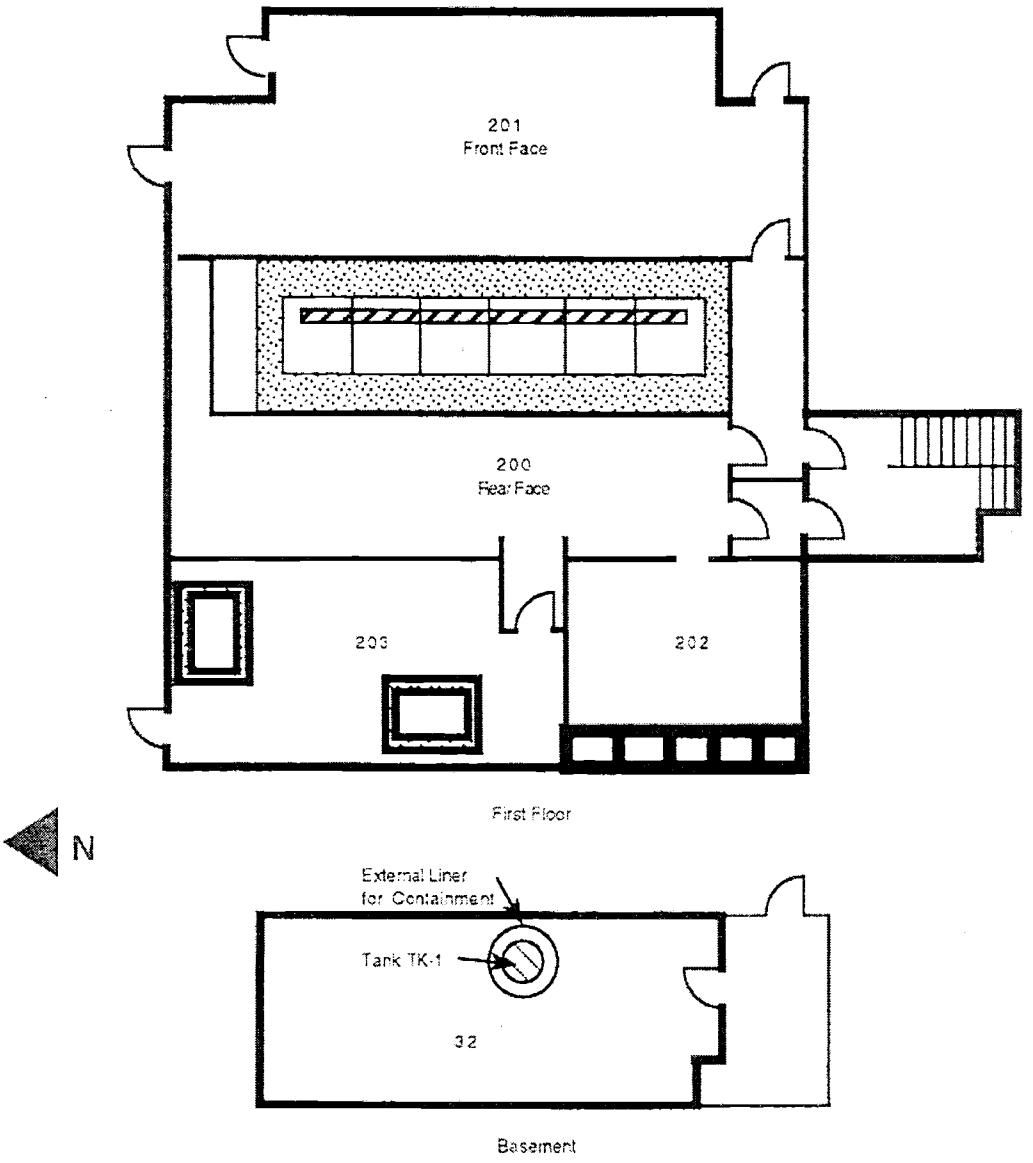

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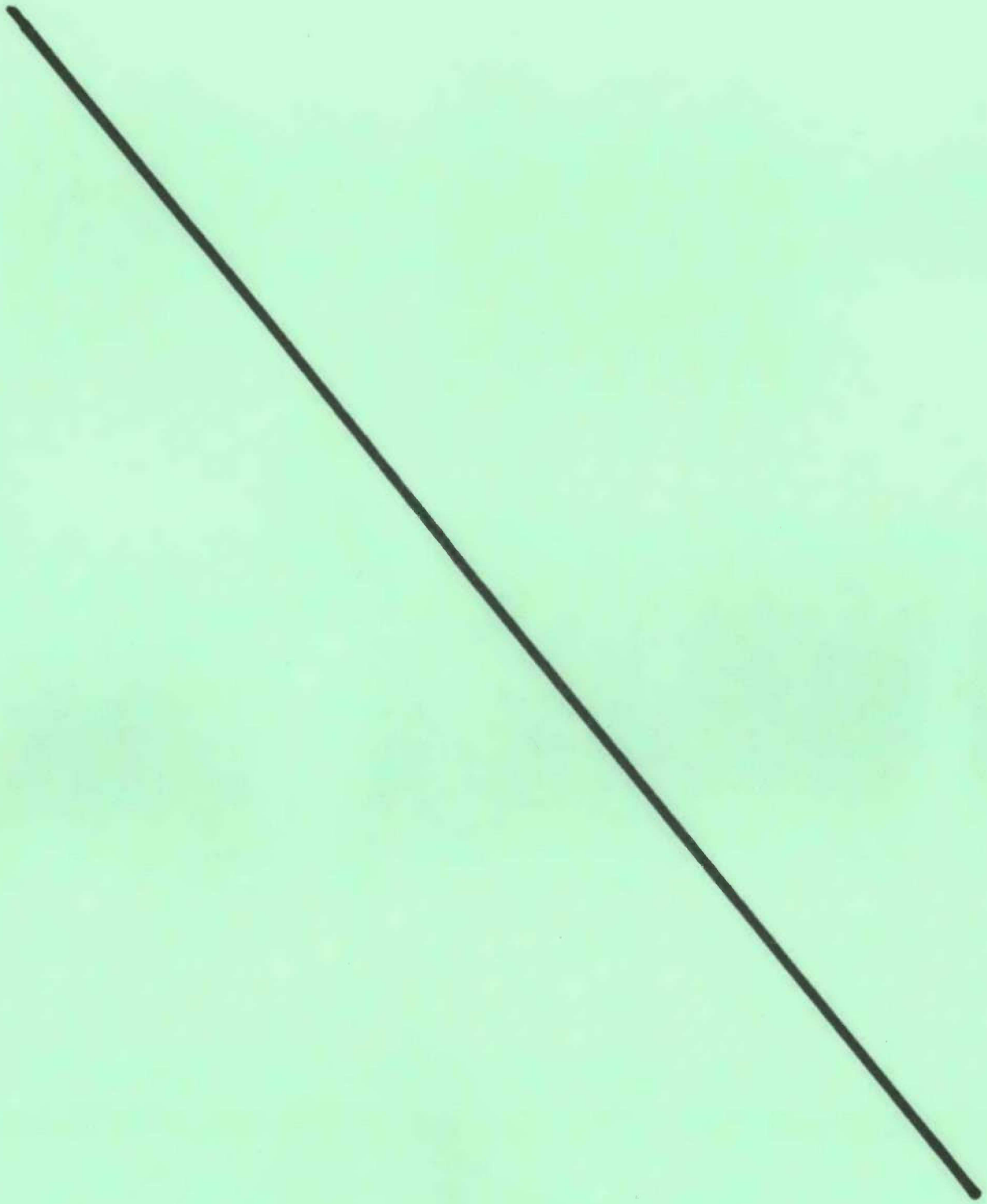
3 **Figure C.3. SAL Tank System**



ADDENDUM E
PROCEDURES TO PREVENT HAZARDS

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ADDENDUM E
PROCEDURES TO PREVENT HAZARDS

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E. PROCEDURES TO PREVENT HAZARDS

The 325 HWTUs are operated to minimize exposure of the general public and operating personnel to dangerous waste.

E.1 Security

This section describes the 24-hour surveillance system, warning signs, and barriers used to provide security and control access to the Hanford Facility. WAC 173-303-310(2)(b), a 24-hour surveillance system, or WAC 173 303-310(2)(c), artificial or natural barriers, are met at the Hanford Facility level and are not the responsibility of the Treatment, Storage, and Disposal (TSD) unit. A 24-hour surveillance system, warning signs, and artificial and natural barriers are used to provide security and control access to the Hanford Facility. The entire Hanford Facility is a controlled access area. The Hanford Facility maintains around the clock surveillance for protection of government property, classified information, and special nuclear materials. The Hanford Patrol maintains a continuous presence of protective force personnel to provide additional security.

Perimeter fences, restrictive signage, and random protective force patrols are used to control access to the 300 Area. All personnel accessing locations on the Hanford Site (except for publicly accessible locations) must possess and display a U.S. Department of Energy (DOE) issued security identification badge indicating the appropriate authorization. All personnel entering or exiting the Hanford Site are subject to random security badge inspections by protective force personnel to validate access authorization. All vehicles and hand-carried items entering or exiting the Hanford Site are subject to random security badge inspections and searches by protective force personnel to validate access authorization and preclude the unauthorized introduction of prohibited/controlled articles, or the unauthorized removal of government or contractor assets.

Signs are posted at the 300 Area boundaries stating NO TRESPASSING. SECURITY BADGES REQUIRED BEYOND THIS POINT. AUTHORIZED VEHICLES ONLY. PUBLIC ACCESS PROHIBITED (or an equivalent legend). In addition, warning signs stating DANGER-UNAUTHORIZED PERSONNEL KEEP OUT (or an equivalent legend) are posted at the entrances to the active portions of the 325 HWTUs. These signs are written in English, legible from a distance of 7.6 meters, and visible from all angles of approach.

E.1.1 Waiver

Waiver of the security procedures and equipment requirements for the 325 HWTUs are not requested. Therefore, the waiver requirement outlined in WAC 173-303-310(1)(a) and (b) are not applicable.

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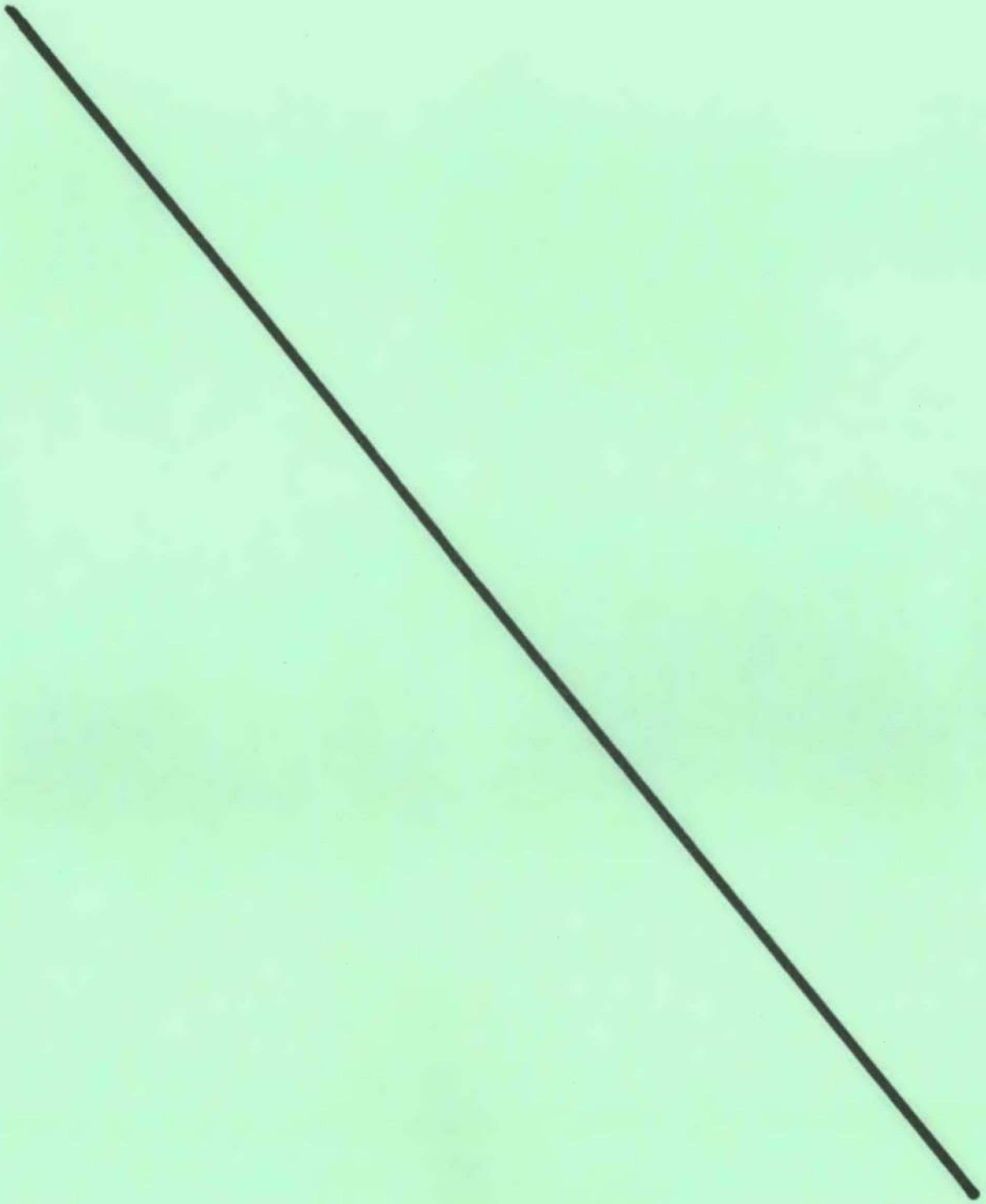
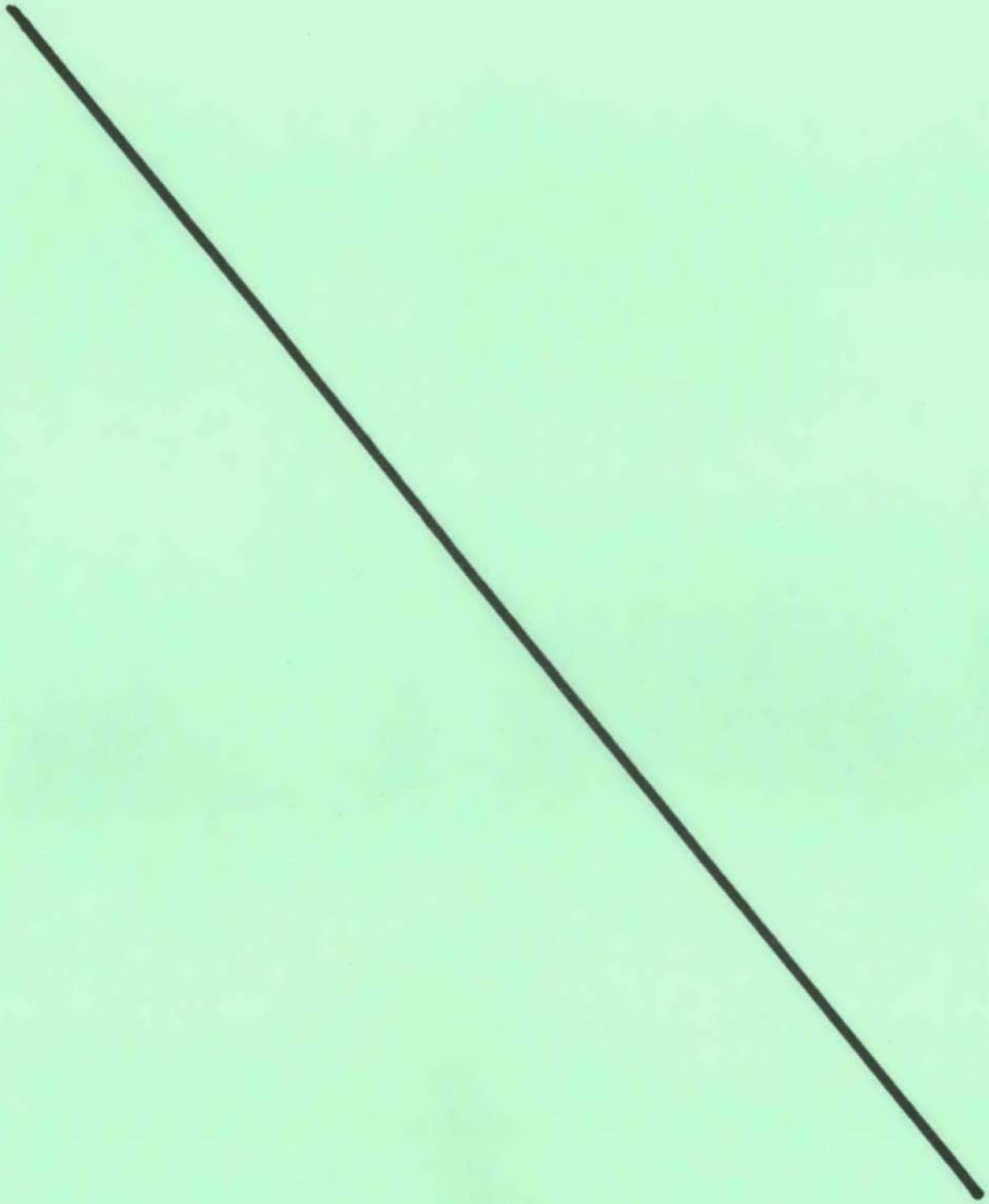


ADDENDUM F
PREPAREDNESS AND PREVENTION



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PREPAREDNESS AND PREVENTION

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F. PREPARDENESS AND PREVENTION

F.1 Preparedness and Prevention Requirements

The following section documents the preparedness and prevention measures taken at the 325 Hazardous Waste Treatment Units (HWTU).

F.1.1 Equipment Requirements

The following sections describe the internal and external communications and emergency equipment in use at the 325 HWTUs.

F.1.1.1 Internal Communications

Internal communication systems are used to provide immediate emergency instruction to personnel in the 325 HWTUs. Internal communications address general emergencies that might occur in the 300 Area and the 325 Building, as well as specific emergencies that might occur. Personnel have access to these internal communication devices whenever waste is handled.

Because of the nature of activities that occur in the 300 Area, the potential exists for emergencies outside of the 325 HWTUs that could impact operations and personnel. Fire alarm signals are located in each building throughout the 300 Area. The nearest emergency siren for 'area evacuation' and 'take cover' is located atop the 318 Building and is audible in all parts of the 325 Building. Numerous criticality howlers (horns) are located throughout the 325 Building and are audible in all parts of the building.

Internal communications that provide emergency instruction in the event of an emergency in the 325 HWTUs and in the 325 Building are listed below. Any alarm activation results in notification of the Building Emergency Director either directly or via Pacific Northwest National Laboratory's (PNNL) Operations Center (375-2400).

- Fire alarms: The fire alarms are used to provide notification for immediate evacuation of the 325 Building. The fire alarms are initiated on activation of the manual pull boxes, heat detectors, and the sprinkler system. Fire alarm pull boxes are located as indicated in Addendum J, Section 13, Attachments 1-3.
- Differential pressure alarms (for the SAL and the glove boxes in Room 528 and 604A): Air monitoring systems with alarms are located in the 325 HWTUs. These alarms sound when normal hot cell ventilation is disrupted.
- Leak detection alarms (for the SAL): Alarms sound when liquid is detected behind the hot cells in the SAL, in the space between the inner and outer shells of Tank TK-1 in the SAL, or when liquid is detected in the secondary containment drip pan underneath the tank.
- PNNL Communicator Notification System (CNS): This system allows emergency messages to be communicated quickly to staff via the PNNL phone system. When the phone is answered, a recorded message will provide event information and inform staff of actions they are expected to take.

The following non-emergency systems can also be used as appropriate and available:

- Building-wide public address (PA) system
- Intercom system (for the SAL)
- Telephones
- Hand-held radios provided by the BED

The PA system is used for building wide broadcasting of verbal emergency instructions to 325 Building personnel. The telephone system is used to provide verbal emergency instructions to 325 HWTUs personnel. The telephones also can be used to verbally transmit emergency information to personnel outside of the 325 HWTUs and to request emergency services. A network of telephones is provided throughout the 325 Building.

Locations of telephones within the 325 HWTUs are shown in Addendum J, Section 13, Attachments 1-3. In addition to the telephone communication system, personnel have access to hand-held radios. The radios are available from the Building Manager. All of the radios transmit at the same frequency and are capable of summoning the PNNL Single Point Contact in case of an emergency.

Hazardous Waste Treatment Unit

There are two fire alarm pull boxes near the HWTU; one is located in the hall north of the entrance to Room 528, and one is in the hallway just east of the south entrance to Room 520. Rooms 520 and 528 are equipped with smoke detectors that, upon activation, initiate the fire alarm system and close dampers between the two rooms and the corridor. Heat detectors are provided in the glove box in Room 528. There are two fire alarm bells just outside the HWTU. These fire alarm bells are located north of the entrance to Room 528 in the hall and east of the south entrance to Room 520 in the hall.

Additionally, a fire alarm strobe is installed in Room 528. The locations of the fire pull boxes are shown in Addendum J, Section 13, Attachment 1.

The glove box in Room 528 is equipped with a differential air pressure alarm that monitors the glove box for loss of negative pressure. If a loss occurs, a local alarm is sounded.

The PA system speakers are located in Rooms 520 and 528.

Shielded Analytical Laboratory

There are four fire alarm pull boxes provided in the SAL; three are in Room 201, and one is in Room 203. Additionally, a fire alarm pull box is located just outside of Room 32. Heat detectors are provided in the six large interconnected hot cells in the SAL. Several fire alarm bells are located throughout the 325 Building, including two fire alarm bells within the SAL (one each in Rooms 201 and 203). These alarms are audible at all locations within the SAL.

The six interconnected hot cells in the SAL are equipped with a differential air pressure alarm that monitors the hot cells for loss of negative pressure. If a loss occurs, a local alarm is sounded.

A cable leak detection system is installed in Room 200. The cable runs behind the back wall of all six hot cells. Liquid escaping from the hot cells on the rear face (Room 200) would contact the cable and automatically sound an alarm device in Room 201. This conductivity cable runs from the hot cells to the secondary containment pan for the SAL tank in Room 32. Any release of the tank system contents to this pan, which contacts the cable, initiates the cable leak detection alarm.

The SAL tank is equipped with a conductivity probe for leak detection within the annulus of this double-shelled tank. The tank also is equipped with a high-liquid-level alarm. In the event of an interstitial leak or overfilling, audible alarms sound at the SAL tank's main control panel in Room 201.

The PA system speakers are located in Rooms 200, 201, and 203. An intercommunication system supplies two-way voice communications between Rooms 32, 200, 201, and 201a.

Cask Handling Area. Fire alarm pull boxes are located near each exit. The locations of the fire pull boxes are shown in Addendum J, Section 13, Attachment 1.

The glove box in Room 604A is equipped with a differential air pressure alarm that monitors the glove box for loss of negative pressure. If a loss occurs, a local alarm is sounded.

PA system speakers are located in Room 603.

Truck Lock. Fire alarm pull boxes are located near each exit. The locations of the fire pull boxes are shown in Addendum J, Section 13, Attachment 1.

PA system speakers are located in Room 610.

3714 Pad. No unit-specific equipment is located at the pad. In the event of an emergency, staff will utilize cell phones or enter the 325 Building to notify 375-2400 and the BED. The BED will then determine the need for 325 Building protective actions and/or use of the ONC to alert others nearby.

F.1.1.2 External Communications

As mentioned in Section F.1.1.1, a fire alarm system and telephone network system are in place at the 325 HWTUs. Both systems can be used to summon emergency assistance. The fire alarm system summons direct response from the 300 Area Fire Station. The telephone system can be used to access the PNNL Single Point Contact directly by dialing 375-2400 or by dialing the emergency number 911. For DOE-RL and other non-PNNL contractor personnel dialing 911 from onsite phones (373-0911 from cell phones), the call goes directly to the Hanford Patrol, which calls the PNNL Single Point Contact. Locations of fire alarm pull boxes and telephones are given in Addendum J, Section 13, Attachment 1. Personnel on the premises have access to these external communication devices.

F.1.1.3 Emergency Equipment

Emergency equipment available for trained 325 HWTUs personnel includes portable fire extinguishers, a fire suppression system, spill response equipment, and decontamination equipment.

With the exception of the hot cells, the entire building also is equipped with automatic sprinkler protection consisting of Schedule 40 steel pipe per ASTM A120 (ASTM 1991) and 150-pound malleable iron fittings per ANSI B16.3 (ANSI 1992). All components are UL-listed or FM-approved. The fire sprinkler system was designed and installed in accordance with National Fire Protection Association (NFPA) 13 for 'ordinary hazard' (NFPA 1996).

Absorbent pillows are capable of absorbing small quantities of spilled inorganic and organic liquids and can be used to contain temporarily any spills of these materials. Their rated absorption capacities range from 250 to 4,000 milliliters.

Mercury spill kits are capable of cleaning up to 25 milliliter of spilled mercury. Acid, caustic, and solvent spill kits contain the materials necessary to clean up small spills of acids, bases, and organic solvents. The absorbent kits in the SAL contain absorbent pads and other materials needed to temporarily contain and clean up small chemical spills.

The appropriate spill kits can be applied, respectively, to small acid and base spills for neutralization during cleanup efforts. The caustic neutralizer has similar capabilities for neutralizing small quantities of spilled bases. If needed, the Hanford Fire Department provides additional emergency equipment.

Portable fire extinguishers (Class ABC, typically 4.5 Kg) and Class D) are located throughout the building. Eyewashes and safety showers are also located in numerous areas in or near the units. The locations of this equipment are noted in Addendum J, Section 13, Attachment 1-3.

Any contaminated water will be contained and cleaned up in accordance with the Addendum J, Contingency Plan.

Shielded Analytical Laboratory

Four 9.0-kilogram ABC portable fire extinguishers are located in the SAL. A portable fire extinguisher is located in Room 201 and Rooms 200 and 203 each have one portable fire extinguisher. The fourth is located just outside Room 32. Additionally, ABC dry chemical fire extinguishers are provided for each of the six large interconnected hot cells in Room 201. These extinguishers are mounted on the outside of each cell with the distribution system within the cells. The cell manipulator arms are used to direct the discharge at a fire within the cell.

F.1.1.4 Water for Fire Control

The five water pipelines that service the 325 Building for fire protection supply adequate water volume and pressure. Each of these lines is 15.2 centimeters in diameter.

Three fire hydrants are located in immediate proximity to the 325 Building; one is approximately 30.4 meters east of the southeast corner of the 325 Building; one is approximately 21.3 meters directly north of the northwest corner of the 325 Building, and one is 33.5 meters west of the southwest corner of the 325 Building. In addition, the 300 Area Fire Station is located within 0.4-kilometer of the building.

F.1.2 Aisle Space Requirements

Aisle spacing is sufficient to allow the movement of personnel and fire protection equipment in and around the containers. This storage arrangement also meets the requirements of the National Fire Protection Association and the Life Safety Code (NFPA 1994) for the protection of personnel and the environment. A minimum 76.0-centimeter aisle space is maintained between rows of containers as required by WAC 173-303-630(5)(c).

F.2 Preventive Procedures, Structures, and Equipment

The following sections describe preventive procedures, structures, and equipment.

F.2.1 Unloading Operations

Procedures have been developed to prevent hazards and to minimize the potential for breakage, punctures, or the accidental opening of containers during the transfer of waste to the 325 HWTUs. All waste is inspected before acceptance to ensure that the waste is in appropriate containers and that the containers are in good condition (see Addendum B, Section B.2.1). Inspection of containers before acceptance minimizes the potential for spills during unloading operations. The potential for spills during waste handling also is minimized using appropriate container handling equipment; small waste items can be unloaded by hand.

The volumes of dangerous waste entering and exiting the SAL are in relatively small containers (Addendum C, Process Information) and, have secondary containment because of the packaging requirements for the mixed waste materials. Any spill from such containers will be contained and not released to the environment.

F.2.2 Run-off

The 325 HWTU, SAL, Cask Handling Area, and Truck Lock were designed to eliminate the likelihood of waste migration via run-off. Because these units are enclosed completely (i.e., complete roof and no open walls), run-off of precipitation is not a factor. The following paragraphs address additional design features provided to eliminate the likelihood of run-off.

Hazardous Waste Treatment Unit. The concrete floor in Rooms 520 and 528 of the HWTU is provided with a chemical resistant polypropylene coating. The coating covers the entire floor and extends approximately 10 centimeters up on each perimeter wall in each room. The rooms also are provided with floor drains and floor trenches at each entrance. The trenches and floor drains flow into the firewater containment tank located in the basement of the 325 Building. The management of any mixed waste that might accumulate in the tank because of a fire is discussed in Addendum C, Process Information.

Shielded Analytical Laboratory. The secondary containment in the SAL is divided into three systems based on three designated areas of the SAL. These areas are the six large, interconnected hot cells, the front face (Room 201), and the back face (Rooms 200, 202, and 203).

The secondary containment system for the six large, interconnected hot cells consists of the stainless steel base of the cell. All waste requiring it is stored in secondary containment consisting of larger containers (e.g. "paint cans" as noted in Addendum C, Section C.1.2.2) and/or pans/trays.

Typically, the use of the secondary containment system is enough to ensure that waste is safely contained. If there were to be a larger scale failure of secondary containment, however, the cell base and trough would collect any spilled waste within the cell. The trough drains by gravity through openings in the bottom of the trough and stainless steel piping to the SAL tank.

Overpack containers and/or spill pallets/drip pans are used as the secondary containment system for the back face of the SAL. The back face of the SAL is used to store mainly solid mixed waste in cans, which are packed in the containers. Any liquids stored here are placed in compatible secondary containment (see Addendum C, Section C.1.4.2). The secondary containment system for the front face of the SAL, which is only used minimally to store mixed waste, consists of the same practice.

Cask Handling Area and Truck Lock. The floor is coated with an epoxy paint. Large waste containers that contain bulk liquids are stored inside Department of Transportation (DOT) approved containers providing secondary containment, or managed on spill containment pallets or drip pans. For compatible wastes consolidated into lab-pack containers, the DOT approved outer container serves as secondary containment – such outer containers will be stored directly on the floor. Containers holding waste not subject to containment system requirements pursuant to WAC 173-303-630(7)(c) will be stored on the floor.

3714 Pad. The 3714 Pad is made of concrete and is not coated. Unimproved adjacent soil areas may also be used for storage. Waste stored at the 3714 Pad unit must therefore:

- Not contain free liquids
- Not exhibit the characteristic of ignitability or reactivity.
- Not designate as F020, F021, F022, F023, F026, or F027.

Containers stored outdoors will be kept closed and inspected weekly for signs of damage or potential leakage. These precautions are adequate to prevent contamination from run-off from the 3714 Pad to surrounding areas.

The secondary containment system for each unit is described in detail in Addendum C.

F.2.3 Water Supplies

The 325 Building is designed and operated to contain safely waste and to prevent any contamination of water supplies. The secondary containment systems and operational limits described in Addendum C, prevent releases to the environment and infiltration of waste that could contaminate groundwater. The containment systems also prevent waste run-off that could contaminate surface water. The nearest water supply is the 300 Area water intake located on the Columbia River, which is less than 0.8 kilometers from the 325 HWTUs.

F.2.4 Equipment and Power Failure

The 325 Building is provided with an emergency power system that initiates upon failure of the primary power system, thereby minimizing the likelihood of the release of dangerous waste or mixed waste during a power failure or equipment failure. The 325 HWTUs have emergency lighting systems that operate automatically during power failure incidents. For actions to be taken in the event of power failure to unit systems or equipment, refer to Addendum J, Contingency Plan.

F.2.5 Personal Protection Equipment

Protective clothing and equipment are provided to employees during normal and emergency operations. Protection levels for emergencies are determined either in consultation with an industrial hygienist, or applicable control work permits or applicable operating procedure.

Per the identified work requirements, protective clothing and equipment is available for all staff working at the SAL and the High-Level Radiochemistry Facility (including the Cask Handling Area and the Truck Lock). Protective clothing and equipment available at the SAL and HLRF include, but are not limited to, the following:

Shielded Analytical Laboratory and High-Level Radiochemistry Facility

- Safety glasses (Rooms 201, 603 and 610)
- Chemical protective suits (Rooms 200, 201 and 603) (part of absorbent kits)

- Goggles (Rooms 200, 201 and 603) (part of absorbent kits)
- Gloves (Rooms 200, 201 and 603) (part of absorbent kits)

Storage and treatment of dangerous waste can occur in Room 520, 524, and 528 of the HWTU. Personal protective equipment is required for personnel working these areas of the HWTU. Protective clothing and equipment available at the HWTU include, but are not limited to, the following:

Hazardous Waste Treatment Unit

- Laboratory coats (325 Building – Men's/women's change room)
- Shoe covers (325 Building – Men's/women's change room)
- Surgeon gloves (Rooms 520, 524 and 528)
- Chemical resistant gloves (Rooms 520, 524 and 528)
- Chemical resistant aprons (Rooms 520, 524 and 528)
- Face shields (Rooms 520, 524 and 528)
- Hard hats (Room 528)
- Safety glasses (Rooms 520, 524 and 528)

Protective equipment for the 3714 Pad is taken from the stock in the HWTU and/or HLRF.

The protective equipment storage areas are well stocked at all times. This equipment is replaced periodically as it is used. The above inventory reflects each type of personal protective equipment that typically is present at the 325 HWTUs. Additional personal protective equipment can be obtained, as needed, from storage locations and sources outside of the 325 HWTUs. These areas include the personal protective equipment storage area in the 700 hall men's and women's change rooms, Room 529, and the men's and women's change rooms in the south end (first floor) of the 325 Building. This personal protective equipment also can be obtained from onsite suppliers for the 325 HWTUs.

Respiratory protective equipment (air purifying, full-face/negative pressure respirators) that can be used by personnel is managed by the 325 Building Manager and must be checked out. This equipment is stored within the 325 Building. In addition, the 700 hall men's and women's change rooms normally contain a 1-week supply of coveralls, laboratory coats, hoods, skull caps, cloth shoe covers, rubber shoe covers, and gloves (canvas, surgeon's, and canner's).

F.3 Prevention of Reaction of Ignitable, Reactive, and/or Incompatible Waste

The following sections describe prevention of reaction of ignitable, reactive, and incompatible waste.

F.3.1 Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Waste

The 325 HWTUs are used to store a variety of ignitable waste. Precautions to prevent ignition of ignitable waste involve separation of waste from sources of ignition and use of procedures to minimize the potential for accidental ignition. There are no routine sources of ignition or open flame in the 325 HWTUs. Work with ignition or heat sources, if required, is limited and controlled in the following ways by management and is performed in compliance with internal requirements for elimination of ignition sources.

- Use of open flame equipment when working with flammable liquids is prohibited.
- Smoking is prohibited around flammable liquids (no smoking is allowed in the 325 Building).
- Electrical equipment used in flammable or explosive atmospheres is required to comply with the National Electrical Code, NFPA 70.
- Use of equipment with automatic, adjustable temperature controls and high temperature limit switches is required to prevent overheating.

- Placement of flammable liquids on hot surfaces is prohibited.
- All static electricity sources require grounding in areas where ignitable vapors might be present.
- Bonding of conductive containers is required when transferring flammable liquids.
- Use of nonsparking tools is required in flammable waste storage areas.

All maintenance or modifications in the 325 HWTUs that require work with ignition sources must receive prior approval by a safety engineer. This approval is documented in the Hanford Facility Operating Record, 325 HWTUs File. Smoking is not allowed in the 325 Building at any time, and the interior and exterior of the building are clearly posted with 'No Smoking' signs. Waste storage areas are not heated by any radiant heat source. All tools used to open ignitable waste containers are constructed of nonsparking materials.

A fire safety engineer familiar with the Uniform Fire Code inspects ignitable waste storage areas annually. This inspection is documented in the Hanford Facility Operating Record, 325 HWTUs File. There also are storage restrictions at the 325 HWTUs for combustible waste as part of fire safety requirements. The storage restrictions defined in Article 50 of the International Fire Code apply to ignitable and reactive waste storage in the 325 Building.

F.3.2 Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste

As described in Section F.3.1, ignitable waste is managed to protect the waste from sources of ignition or open flame. Ignitable waste containers are maintained in good condition and inspected weekly to minimize the potential for releases that could result in fire. Containers of ignitable waste are protected from high temperatures to prevent the potential for pressurization and buildup of ignitable vapors. Containers of ignitable waste are stored in flammable material storage cabinets within waste storage areas (Addendum C). Limitations on sizes of containers and amount of storage in cabinets are discussed in Addendum C.

Small quantities of reactive waste are accepted for storage in the 325 HWTUs. Information on all reactive and other waste accepted by the HWTU and SAL is documented on a waste tracking form, which is reviewed carefully by personnel before accepting the waste. This form contains information on the unique handling requirements of the waste. Any reactive waste requiring special handling and storage to prevent unwanted reactions is appropriately packaged before arriving at the 325 HWTUs. This packaging safeguards against reactions resulting from air or water contact, shock, and other causes. Reactive waste is handled and stored in a manner commensurate with the specific reaction hazards posed by the waste. This includes segregating the waste from other waste and reagent chemicals with which the waste potentially could react.

Because a wide variety of waste can be accepted at the 325 HWTUs, the potential exists for storage of incompatible waste. Mixing of incompatible waste is prevented through waste segregation and storage procedures. Chemical waste stored in the 325 HWTUs is separated by compatibility and hazard class and stored in separate storage areas. Separate storage shelves and cabinets are used within the storage areas (Addendum C) to provide further waste segregation. Before accepting waste from generating units, waste management staff determines the DOT hazard class for each waste (see Addendum B) so that waste can be stored with compatible materials. The following general guidance is used to segregate and separate chemicals:

- Store acids on a low storage shelf or in acid storage cabinets.
- Separate acids from bases and alkaline metals such as potassium or sodium.
- Separate oxidizing acids from organic acids and flammable or combustible materials.
- Store bases away from acids and store solutions of inorganic hydroxides in polyethylene containers.

- Store oxidizers away from flammable or combustible materials and reducing agents such as zinc, alkaline metals, and formic acid.
- Store peroxide forming chemicals in air-tight containers in a dark, cool, and dry place (inside of cabinets).
- Store flammable materials in approved containers or cabinets.
- Separate flammable materials from oxidizing acids and oxidizers and keep them away from sources of ignition.
- Clearly, mark cabinets to identify the hazards associated with their contents.

The potential for waste ignition or reaction at the 325 HWTUs also is minimized through storage restrictions on hazardous materials quantities. The storage restrictions defined in the International Fire Code, Article 50 for Class B Occupancy apply to ignitable and reactive waste storage in the 325 HWTUs. The weekly inspection of the 325 HWTUs includes checking to see if waste inventories are below these limits. These inspections are documented in the Hanford Facility Operating Record, 325 HWTUs File.

In the unlikely event the fire sprinkler system in Rooms 520, 524, and 528 is activated, the resulting run-off will be contained in the firewater collection tank located in the basement of the 325 Building. This tank is described in detail in Addendum C.

F.3.3 Management of Incompatible Waste in Tank Systems

Waste discharged to the SAL tank from the hot cells typically consists of the same type of waste managed in the hot cells. Sampling and analysis would be used if sufficient process knowledge were not available to characterize the waste for waste acceptance criteria purposes. The waste is treated in the SAL tank, if necessary.

F.3.4 Management of Incompatible Waste in Containers or Tanks

Incompatible waste and other materials are handled as described in Section F.3.2 and in accordance with established operating methods. Storage restrictions that ensure proper separation of containers of incompatible material in the 325 HWTUs are described in Section F.3.2.

Ignitable or reactive waste is not placed in the tank systems unless the waste has been treated, rendered, or mixed so that the waste no longer meets the definition of ignitable or reactive waste under WAC 173-303-090 (Addendum B).

Drawings of the 325 HWTUs are available to ensure that ignitable and/or reactive waste is located at least 15 meters from the unit's property line.

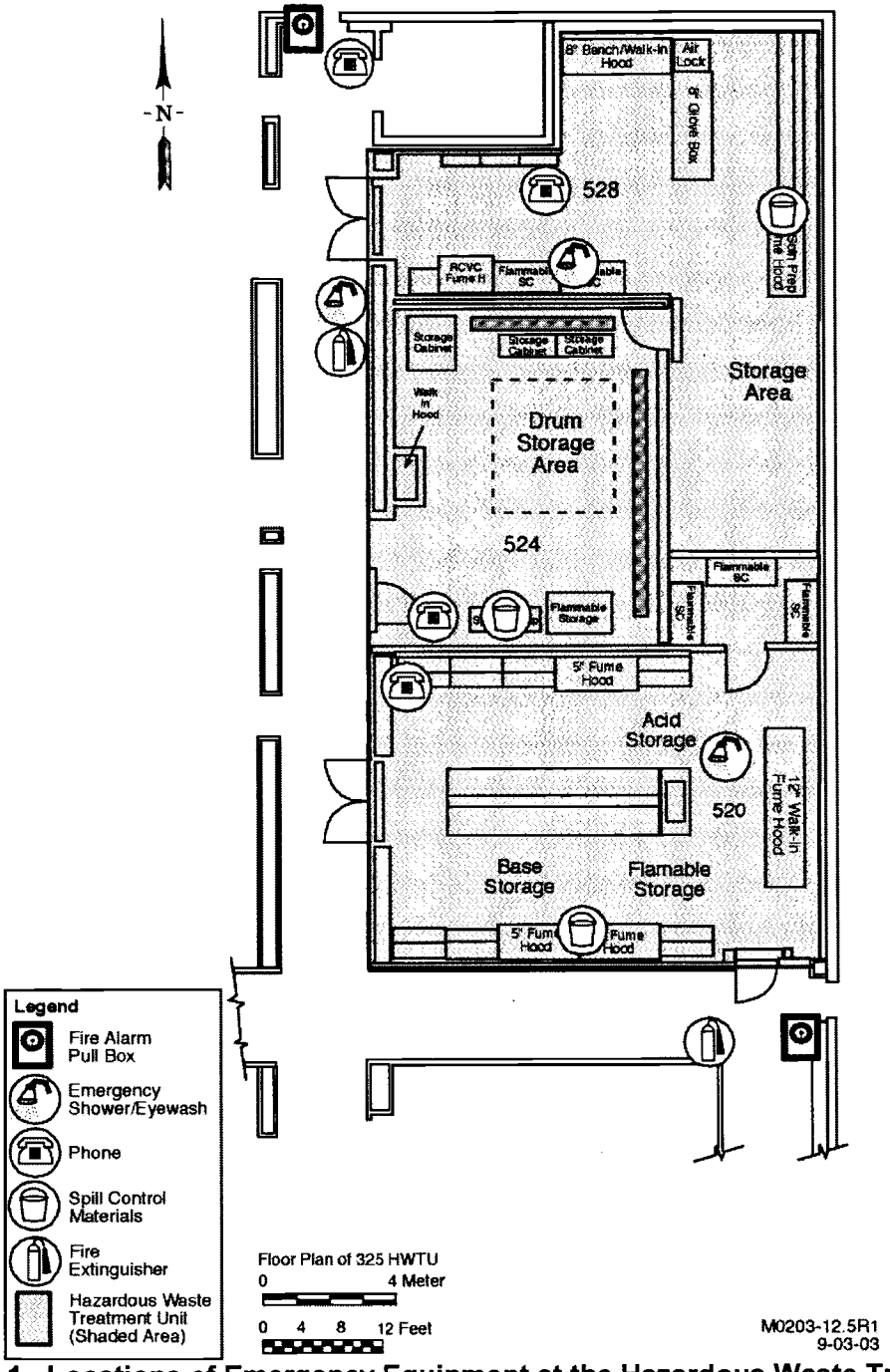
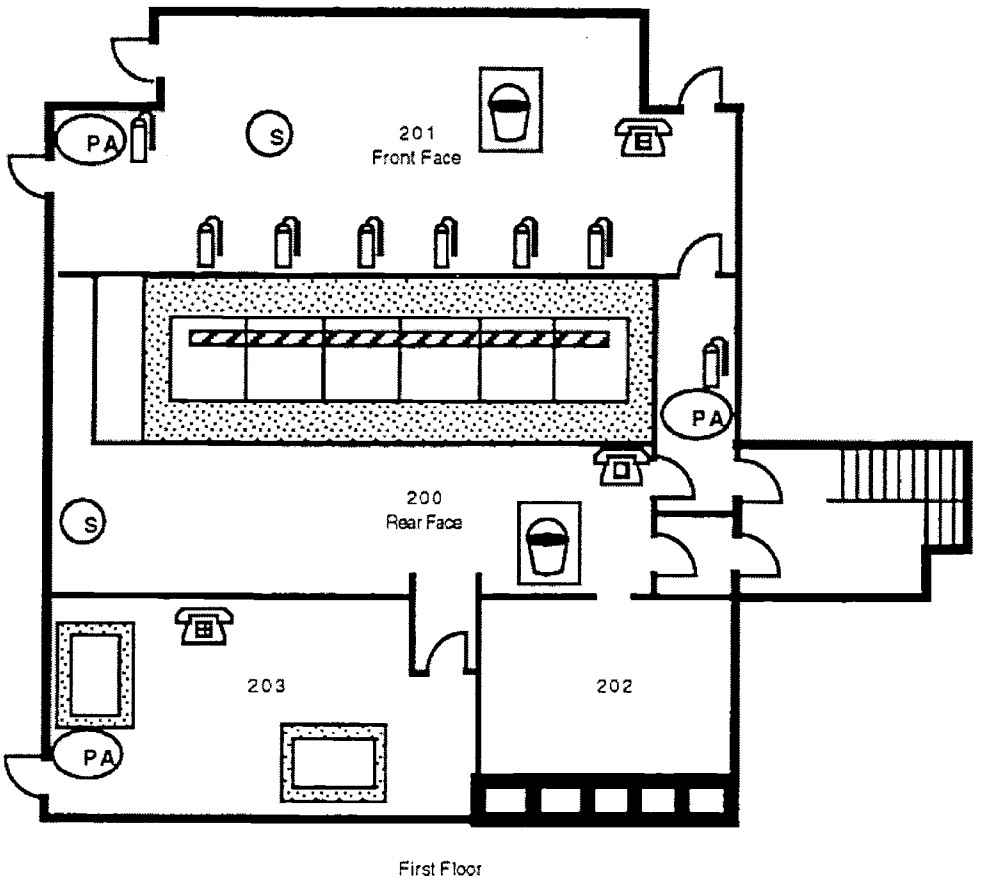


Figure F.1. Locations of Emergency Equipment at the Hazardous Waste Treatment Units



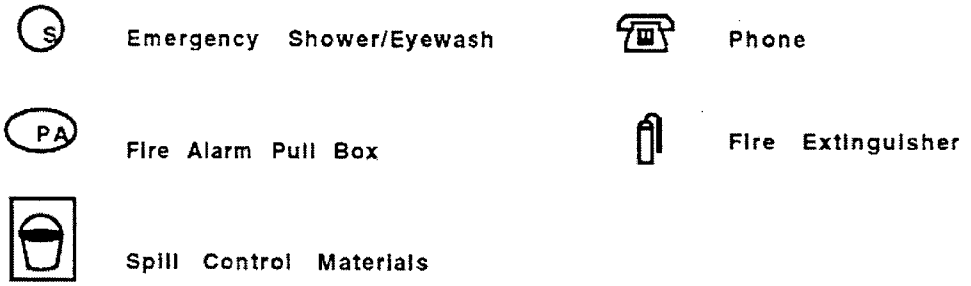


Figure F.2. Locations of Emergency Equipment at the Shielded Analytical Laboratory (First Floor)

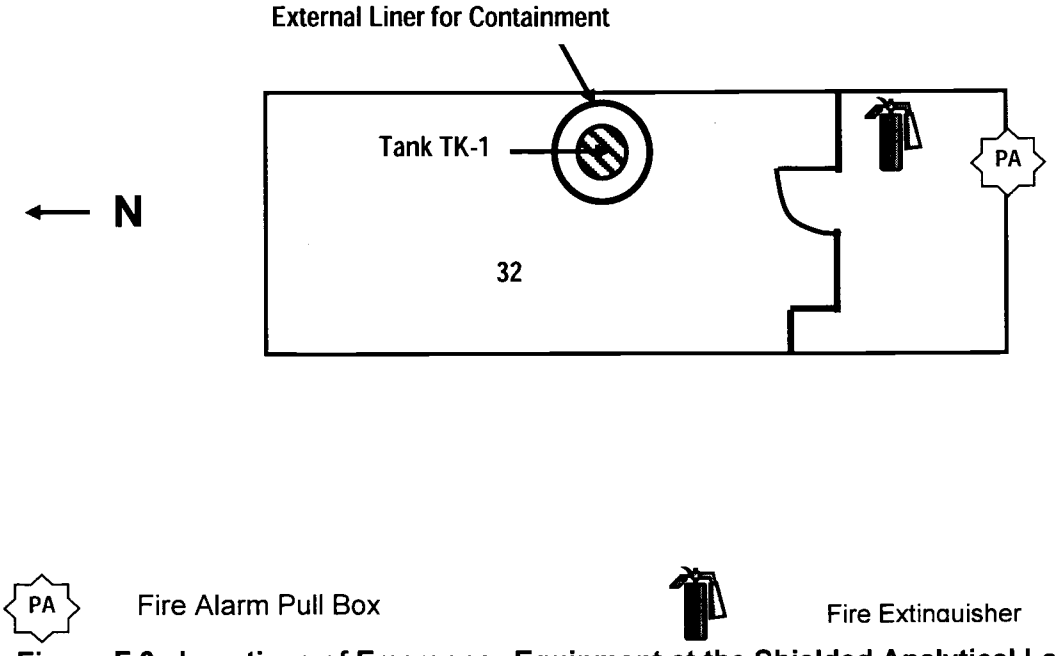


Figure F.3. Locations of Emergency Equipment at the Shielded Analytical Laboratory (Basement)

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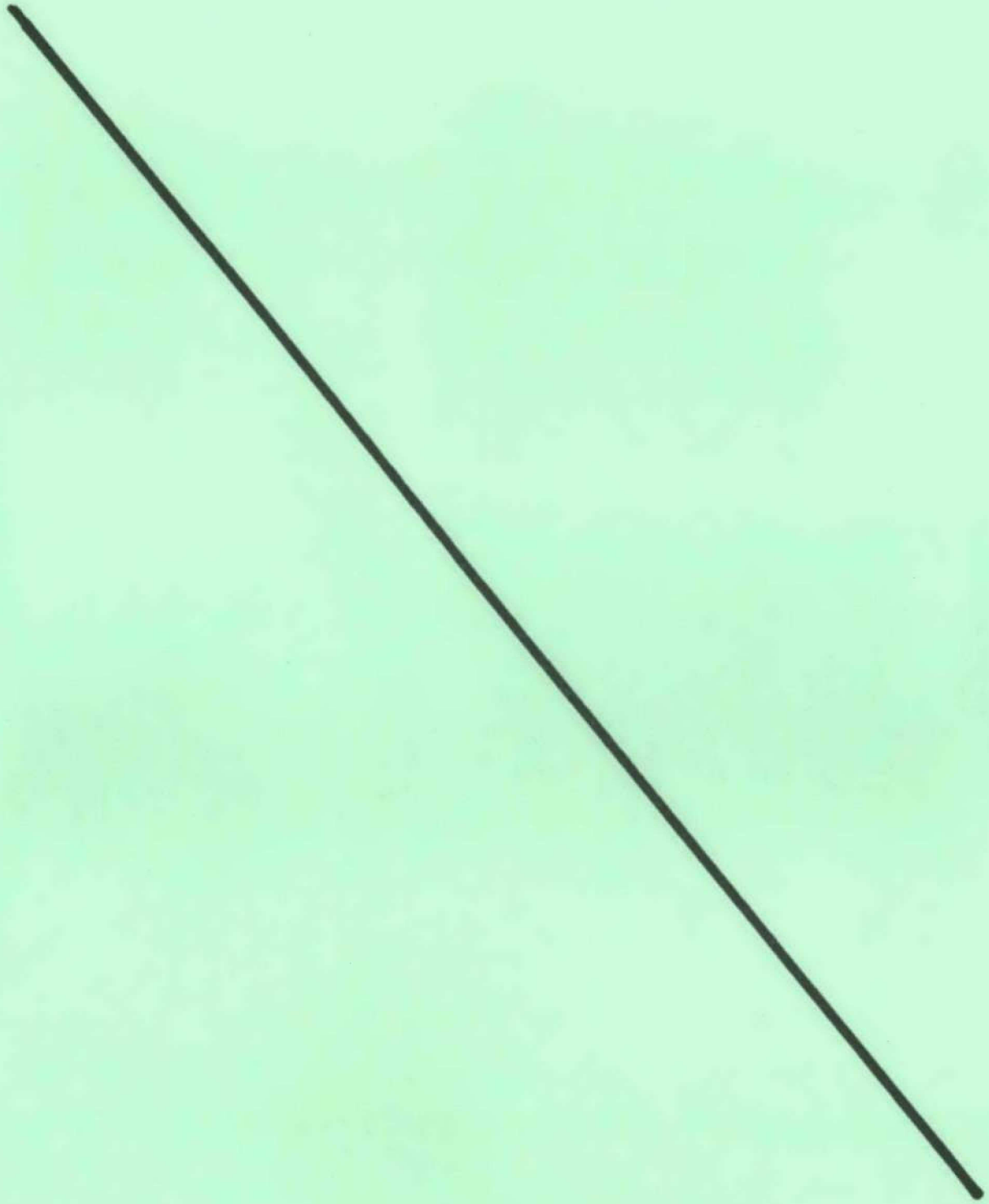

ADDENDUM G
PERSONNEL TRAINING

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ADDENDUM G
PERSONNEL TRAINING

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G PERSONNEL TRAINING

This Addendum discusses personnel training requirements based on WAC 173-303 and the Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit, WA7890008967 (Permit). In accordance with WAC 173-303-806(4)(a)(xii), the *Hanford Facility Dangerous Waste Part B Permit Application* must contain two items: (1) *an outline of both the introductory and continuing training programs by owners or operators to prepare persons to operate or maintain the TSD facility in a safe manner as required to demonstrate compliance with WAC 173-303-330* and (2) *a brief description of how training will be designed to meet actual job tasks in accordance with the requirements in WAC 173-303-330(1)(d).* Permit Condition II.C (Personnel Training) contains training requirements applicable to Hanford Facility personnel and non-Facility personnel.

This Addendum provides the information necessary to comply with training requirements at the 325 Hazardous Waste Treatment Units (HWTUs).

G.1 Outline of Introductory and Continuing Training Programs

The introductory and continuing training programs are designed to prepare personnel to manage and maintain the Treatment, Storage, and Disposal (TSD) unit in a safe, effective, and environmentally sound manner. In addition to preparing personnel to manage and maintain TSD units under normal conditions, the training programs ensure that personnel are prepared to respond in a prompt and effective manner should abnormal or emergency conditions occur. Emergency response training is consistent with the description of actions contained in Addendum J, Contingency Plan. The introductory and continuing training programs contain the following objectives:

- Teach 325 HWTUs personnel to perform their duties in a way that ensures the 325 HWTUs compliance with WAC 173-303.
- Teach 325 HWTUs personnel dangerous waste management procedures (including implementation of the contingency plan) relevant to the job titles/positions in which they are employed.
- Ensure 325 HWTUs personnel can respond effectively to emergencies.

Introductory training includes general 325 HWTUs training and TSD unit-specific training. General 325 HWTUs training is described below, and is provided in accordance with Permit Condition II.C.2. TSD unit-specific training is provided to 325 HWTUs personnel allowing those personnel to work unescorted, and in some cases is required for escorted access. 325 HWTUs personnel cannot perform a task for which they are not properly trained, except to gain required experience while under the direct supervision of a supervisor or coworker who is properly trained. 325 HWTUs personnel must be trained within 6 months after their employment at or assignment to the 325 HWTUs, or to a new job title/position at the 325 HWTUs, whichever is later.

General Hanford Facility training

Permit Condition II.C.2 requires Hanford Facility personnel to receive general facility training within 6 months of hire. This training provides an orientation on dangerous waste management activities being conducted on the 325 HWTUs and includes the following:

- Description of emergency signals and appropriate personnel response.
- Identification of contacts for information regarding dangerous waste management activities.
- Introduction to waste minimization concepts.
- Identification of contact(s) for emergencies involving dangerous waste.
- Familiarization with the applicable portions of the *Hanford Emergency Management Plan* (Permit Attachment 4).

PNNL will provide training to all new staff that meets the requirements listed for Permit Condition II.C.2.

Permit Condition II.C.4, requires the Permittees to provide the necessary training to non-Facility personnel (i.e., visitors, subcontractors) as appropriate for the locations and activities undertaken. At a minimum, this training describes dangerous waste management hazards on the Hanford Facility. PNNL will provide this training to non-Facility personnel accessing PNNL-occupied Hanford facilities.

Contingency Plan training

325 HWTUs personnel receive training on applicable portions of Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) in the general 325 HWTUs training. In addition, 325 HWTUs personnel receive training on the content of the description of actions contained in Addendum J, Contingency Plan to be able to effectively respond to emergencies.

Emergency Coordinator training

325 HWTUs personnel who perform emergency coordinator duties in WAC 173-303-360 (e.g., Building Emergency Director) in the Hanford Incident Command System receive training on implementation of the contingency plan and fulfilling the position within the Hanford Incident Command System. These 325 HWTUs personnel must also become thoroughly familiar with applicable contingency plan documentation, operations, activities, location, and properties of all waste handled, location of all records, and the unit/building layout.

Operations training

Dangerous waste management operations training (e.g., waste designation training, shippers training) will be determined on a unit-by-unit basis and shall consider the type of waste management unit (e.g., container management unit) and the type of activities performed at the waste management unit (e.g., sampling). For example, training provided for management of dangerous waste in containers will be different than the training provided for management of dangerous waste in a tank system. Common training required for compliance within similar waste management units can be provided in general training and supplemented at the TSD unit. Training provided for TSD unit-specific operations will be identified in the training plan documentation based on (1) whether a general training course exists, (2) the training needs to verify waste management unit compliance with WAC 173-303, and (3) training commitments agreed to with Ecology.

G.1.1 Continuing Training

Continuing training meets the requirements for WAC 173-303-330(1)(b) and includes general Hanford Facility training and TSD unit-specific training.

General Hanford Facility training

Annual refresher training is provided for general 325 HWTUs training. Refer to description in Section G.1.

Contingency Plan training

Annual refresher training is provided for contingency plan training. Refer to description above in Section G.1.

Emergency Coordinator training

Annual refresher training is provided for emergency coordinator training. Refer to description above in Section G.1.

Operations training

Refresher training occurs on many frequencies (i.e., annual, every other year, and every 3 years) for operations training. When justified, some training will not contain a refresher course and will be identified as a one-time only training course. This training plan specifies the frequency for each training course. Refer to description above in Section G.1.

G.2 Description of Training Design

Proper design of a training program verifies that personnel who perform duties on the 325 HWTUs related to WAC 173-303-330(1)(d) are trained to perform their duties in compliance with WAC 173-303. Actual job tasks, referred to as duties, are used to determine training requirements. The first step taken to verify that 325 HWTUs personnel have received the proper training is to determine and document the waste management duties by job title/position. The second step compares waste management duties to the general waste management unit training curriculum. If the general waste management unit training curriculum does not address the waste management duties, the training curriculum is supplemented and/or on-the-job training is provided. The third step summarizes the content of a training course necessary to verify that the training provided to each job title/position addresses associated waste management duties. The last step is to assign training curriculum to 325 HWTUs personnel based on the previous evaluation. The training plan documentation contains this process.

Waste management duties include those specified in Section G.1 as well as those contained in WAC 173-303-330(1)(d). Training elements of WAC 173-303-330(1)(d) applicable to the 325 HWTUs operations include the following:

- Procedures for using, inspecting, repairing, and replacing emergency and monitoring equipment.
- Communications or alarm systems.
- Response to fires or explosions.
- Shutdown of operations.

325 HWTUs personnel who perform these duties receive training pertaining to their duties. The training plan documentation described in Section G.3 contains specific information regarding the types of training 325 HWTUs personnel receive based on the outline in Section G.1.

G.3 Description of Training Plan

In accordance with Permit Condition II.C.3, the 325 HWTUs chapter of the *Hanford Facility Dangerous Waste Permit* must contain a description of the training plan. The training plan documentation is maintained outside of the *Hanford Facility Dangerous Waste Part B Permit Application* and the Permit. Therefore, changes made to the training plan documentation are not subject to the Permit modification process. However, the training plan documentation is prepared to comply with WAC 173-303-330(2).

Documentation prepared to meet the training plan consists of hard copy and/or electronic media as provided by Permit Condition II.C.1. The training plan documentation consists of one or more documents and/or a training database with all the components identified in the core document.

A description of how training plan documentation meets the three items in WAC 173-303-330(2) is as follows:

1. WAC 173-303-330(2)(a): *The job title, job description, and name of the employee filling each job. The job description must include requisite skills, education, other qualifications, and duties for each position.*

   Description: The specific 325 HWTUs personnel job title/position is correlated to the waste management duties. Waste management duties relating to WAC 173-303 are correlated to training courses to verify that training is properly assigned.

   Only names of 325 HWTUs personnel who carry out job duties relating to TSD unit waste management operations at the 325 HWTUs are maintained. Names are maintained within the training plan documentation. A list of 325 HWTUs personnel assigned to the 325 HWTUs is available upon request.

   Information on requisite skills, education, and other qualifications for job title/positions are addressed by providing a reference where this information is maintained (e.g., human resources).

Specific information concerning job title, requisite skills, education, and other qualifications for personnel is found in the training plan documentation and can be provided upon request.

2. WAC 173-303-330(2)(b): *A written description of the type and amount of both introductory and continuing training required for each position.*

   Description: In addition to the outline provided in Section G.1, training courses developed to comply with the introductory and continuing training programs are identified and described in the training plan documentation. The type and amount of introductory and continuing training is specified in the training plan documentation as shown in Table G.1.

3. WAC 173-303-330(2)(c): *Records documenting that personnel have received and completed the training required by this section. The Department may require, on a case-by-case basis, that training records include employee initials or signature to verify that training was received.*

   Description: As specified in Permit Condition II.C.1, PNNL will maintain documentation in accordance with WAC 173-303-330(2) and (3). Training records may be maintained in hard copy form or by using electronic data storage. At a minimum, training records will consist of course attendance rosters correlating the training received with the personnel who were in attendance. Training records are maintained in accordance with the requirements of the *Privacy Act of 1974*. Training records for personnel are available for inspection purposes through 59 FR 17091, which gives federal, state, and local government officers 'routine use' access to training records where a regulatory program being implemented is applicable to a U.S. Department of Energy (DOE) or contractor program.

Table G.1. 325 HWTUs Training Matrix

Description of Training Course[1]	Training Category[2]	Retrain Frequency[3]	Staff Position		
			Waste Operations Manager	Waste Operations Staff	Hot Cell Operations Staff
Safety and Health Training	GHFT	Annual	X	X	X
Building Emergency Procedure	CPT	Annual	X	X	X
Building Emergency Director Training	ECT	Annual	X[4]	X[4]	X[4]
Advanced Waste Management Training	OT	Annual	X	X	X
Container Management	OT	When Revised[5]	X	X	X
Tank System Management	OT	When Revised[5]	X	X	X

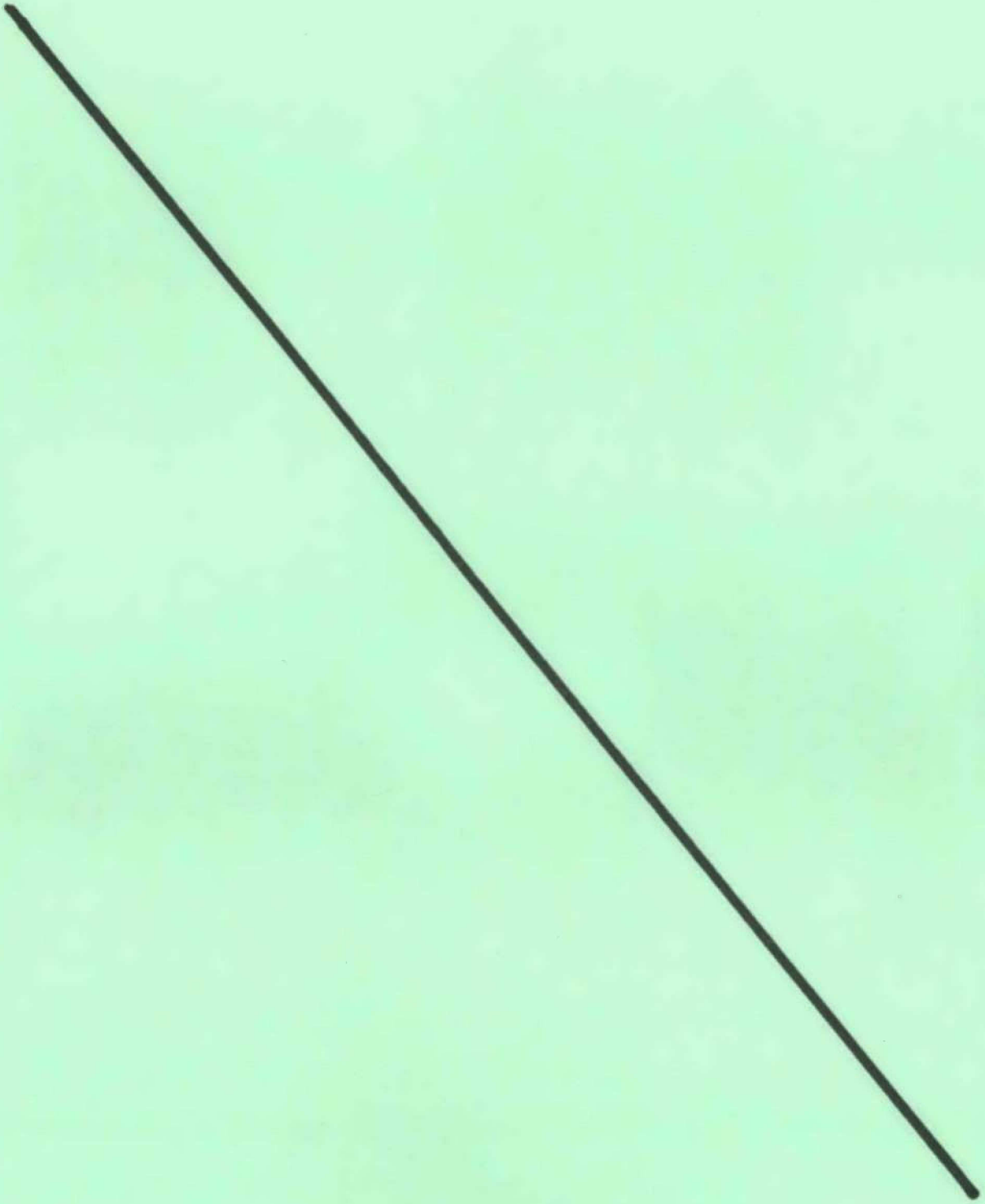
[1]Refer to the 325 HWTUs Training Plan for a complete description of coursework in each training category.

[2]GHFT – General Hanford Facility Training; CPT – Contingency Plan Training; ECT – Emergency Coordinator Training; OT – Operations Training. See Section G.1.1 for description of these categories.

[3] All courses required initially with refreshers administered as noted in this column.

[4] Limited to unit staff assigned these duties.

[5] Reading Assignment: Staff re-read the procedure(s) included in this category whenever they are revised (including minor revisions).



ADDENDUM H
CLOSURE PLAN

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ADDENDUM H
CLOSURE PLAN

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H. CLOSURE PLAN

The 325 Hazardous Waste Treatment Units (HWTU) will be clean closed in accordance with the requirements of WAC 173-303-610. No post closure activities currently are applicable or required because the 325 HWTUs will be clean closed.

Units or portions of units making up the 325 HWTUs Operating Unit Group may be closed pursuant to this Closure Plan individually, or more than one unit may be closed at the same time. [WAC 173-303-610(1)(d)]

H.1 Closure Plan

H.1.1 Closure Performance Standard

The 325 HWTUs will be closed in a manner that:

- Minimizes the need for further maintenance.
- Controls, minimizes, or eliminates to the extent necessary to protect human health and the environment, post closure escape of dangerous waste, dangerous waste constituents, leachate, contaminated runoff, or dangerous waste decomposition products to the ground, surface water, ground water, or the atmosphere.
- Returns the land to the appearance and use of surrounding land areas to the degree possible, given the nature of the previous waste management activities. [WAC 173-303-610(2)(a)]

The 325 HWTUs operating record will be reviewed at the time of closure to determine whether there have been releases from the dangerous waste management unit(s) being closed to the soil, groundwater, surface water, or air. A physical walkdown of the unit(s) being closed will also be performed. If there is any evidence of spills or leaks from the unit(s) into the environment, removal of contamination will be integrated with the final disposition of the 325 Building and underlying soil contamination, as described in the 300-FF-2 final Record of Decision and the approved Remedial Action Work Plan. [WAC 173-303-610(1)(e), WAC 173-303-610(3)(a)(ix)].

Clean closure decontamination standards for structures, equipment, bases, liners, etc., are those specified for hazardous debris in 40 CFR 268.45, Table 1 per Ecology clean closure guidance (Ecology 1994). [WAC 173-303-610(2)(b)(ii)] The 'clean debris surface' is the performance standard for metal and concrete surfaces.

Attainment of a 'clean debris surface' will be verified by a visual inspection in accordance with the standard that states:

> *A clean debris surface means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices and pits shall be limited to no more than 5 percent of each square inch of surface area. (40 CFR 268.45, Table 1)*

H.1.2 Closure Activities

Closure activities will remove dangerous waste from each unit being closed, and relocate for continued use, decontaminate, or dispose associated structures and equipment. [WAC 173-303-610(3)(a)(i)]

Partial closure could involve closing a portion of a unit or an entire unit. Except for the timing of the closure activities, partial closure activities would be conducted in the same way as those described in this closure plan for closure of the entire 325 HWTUs Operable Unit Group (OUG), i.e. final closure. [WAC 173-303-610(3)(a)(ii)]

The hot cells are connected to the SAL tank by means of the drains in the trough in the front of the hot cells. The only way to introduce waste into the SAL tank is via the hot cell drains.

Similarly, the only way to retrieve waste from the SAL tank is to pump it into containers in Cell 6 (northernmost cell in the hot cell gallery) for storage and/or treatment. Decontamination in conjunction with closure is expected to introduce liquid waste into the SAL tank from the hot cells, and rinsate from the SAL tank closure will need to be treated and containerized in the hot cell. As a result, the SAL tank cannot begin closure until storage and treatment in the hot cells is concluded. Similarly, the hot cells cannot begin closure until the SAL tank is ready to close. Due to this mutual dependency, storage and treatment in the hot cells and in the SAL tank will begin closure only when the last of these two units begin closure. [WAC 173-303-610(3)(a)(i); WAC 173-303-610(4)(a)(i); WAC 173-303-610(4)(b)(i)]

H.1.3 Maximum Extent of Operation

The physical boundaries of the 325 HWTUs' individual units are shown in Addendum A.

H.2 Closure of Container Storage and Treatment Areas (Non-Hot Cell)

H.2.1 Removing Dangerous Waste

Inventory removal procedures from the container storage/treatment unit(s) being closed will be identical to the waste handling, treating, packaging, and manifesting activities given in Addendum B and C of this permit.

During closure, wastes will simply be relocated to other, unclosed portions of the 325 HWTUs (in the case of partial closure) or transferred to other Hanford Permit operating units for subsequent management. Offsite treatment and/or storage facilities may be used if appropriate.

H.2.2 Decontaminating Structures, Equipment, and Soil

At the time of partial or final closure of the unit(s) being closed, equipment and structures in the unit(s) being closed will either be removed and disposed of, or be decontaminated. Equipment and structures that exhibit a 'clean debris surface' before starting closure activities will be considered decontaminated and receive no further decontamination.

Decontamination methods for equipment and structures will be selected from appropriate technologies (40 CFR 268.45, Table 1) such as water washing and spraying, high-pressure water jet scarifiers, abrasive blasting, aquablasting, or mechanical concrete scrubbers and scarifiers. Such technologies will be used until a clean debris surface is obtained or the effort to decontaminate is abandoned (i.e. the equipment or structure is removed for disposal.)

All equipment used for decontamination will be decontaminated or disposed of before closure is complete. All cleaning and decontamination waste will be collected and analyzed as described in Section H.2.4. Any disposable equipment will be placed in a container and properly disposed.

If review of the operating record determines that releases to the firewater containment tank have not occurred during the operating life of the 325 HWTUs, the internal surface of the firewater containment tank will be visually inspected. If a 'clean debris surface' is present at the beginning of the closure process, the firewater containment tank will be considered clean closed. If the surface of the liner does not meet the 'clean debris surface' standard, the tank liner will be removed and disposed. If the underlying tank surface does not meet the clean debris surface standard, it will be decontaminated in accordance with this section or disposed.

H.2.3 Management of Decontamination Waste from Closing Container Units (Non-Hot Cell)

Decontamination waste from closing container storage and treatment units will be placed in containers and sampled to determine disposal requirements. Samples from each container will be analyzed as set forth in Table H.1. Decontamination waste will be managed at a permitted Treatment, Storage, and Disposal (TSD) unit or treated and disposed onsite.

H.2.4 Inspection to Identify Extent of Decontamination/Removal and to Verify Achievement of Closure Standard

Attainment of a 'clean debris surface' will be verified by a visual inspection in accordance with the standard that states: A clean debris surface means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices and pits shall be limited to no more than 5 percent of each square inch of surface area. (40 CFR 268.45, Table 1).

Areas of degraded surface material, such as significant concrete cracking or heavily gouged steel, will be evaluated by non-destructive or destructive means to determine depth of significant surface defects, amount of contamination present in the defects, and to determine if environmental contamination has resulted from the material defect.

H.3 Closure of the Shielded Analytical Laboratory Hot Cells and Tank

The activities required for the closure of the SAL hot cells and tank system are described in the following sections. As noted in Section H.1.2, these units will be closed at the same time as their operations are mutually interdependent.

H.3.1 Removing Dangerous Waste

Closure or partial closure activities will be initiated by removal of the dangerous waste inventory present in the hot cell and tank at the time of closure or partial closure. Inventory removal procedures will be performed in accordance with the waste handling, treating, packaging, and manifesting requirements of Addenda B and C of this Permit.

During closure, wastes will simply be relocated to other, unclosed portions of the 325 HWTUs (in the case of partial closure) or transferred to other Hanford Permit operating units for subsequent management. Offsite treatment and/or storage facilities may be used if appropriate.

H.3.2 Decontaminating Equipment, Structures, and Soils

At the time of hot cell tank closure, all equipment and structures in dangerous waste storage and treatment areas will be either removed and disposed of, or decontaminated in accordance with this section. Equipment and structures that exhibit a 'clean debris surface' before starting closure activities will be considered decontaminated and receive no further decontamination.

Decontamination methods for equipment and structures will be selected from appropriate technologies found in 40 CFR 268.45, Table 1, such as water washing and spraying, high-pressure water jet scarifiers, abrasive blasting, aquablasting, or mechanical concrete scrubbers and scarifiers. Other methods not included in 40 CFR 268.45, Table 1 may be utilized to address non-RCRA contaminants, but cannot be used alone to achieve a clean debris surface. These methods will be used until a clean debris surface is obtained, or the effort to decontaminate is abandoned (i.e. the equipment or structure is removed for disposal.)

All equipment used for decontamination will be decontaminated or disposed of before closure is complete. All cleaning and decontamination waste will be collected and managed as described in Section H.3.5. Any disposable equipment will be containerized and disposed of based on the status of the waste as dangerous, nondangerous, or mixed waste.

No contaminated soil is expected to be removed in conjunction with the closure of the hot cells and SAL tank units at the 325 HWTUs OUG due to the construction of the building and the scope of operations. If it is necessary to remove soil, the closure plan will be amended to include necessary details such as soil removal, sampling to verify adequacy of removal, and subsequent management of the removed soil. Soil removal may also be deferred to the 300-FF-2 cleanup in accordance with H.1.1.

H.3.3 Decontamination of Hot Cell Trough

The collection trough in the interconnected SAL hot cells will be decontaminated using an appropriate decontamination technique (40 CFR 268.45, Table 1) until a clean debris surface is obtained. Any wastewater collected in each sump from the cleaning process will be collected in the SAL waste tank system and managed as dangerous waste.

H.3.4 Decontamination of the Shielded Analytical Laboratory Tank System

At closure, the SAL tank and ancillary equipment, tank secondary containment pan, and associated tank piping will be decontaminated using water washing and spraying (40 CFR 268.45, Table 1). This may be followed by other appropriate techniques if necessary to obtain a clean debris surface. Run-off of decontamination solutions and wastewater will be prevented either by performing cleaning activities within existing containment structures or within portable containment pans or by surrounding the decontamination area with plastic and absorbent pads.

H.3.5 Management of Decontamination Waste from SAL

Decontamination liquid from the SAL hot cells will be accumulated in cell or in the tank and sent to a permitted facility. All nonliquid waste generated during decontamination operations and the equipment used (e.g., sandblast grit, personnel protective equipment and clothing, disposable equipment) will be collected in containers and stored onsite. Samples of the waste could be collected and analyzed as described in Section H.2.4.

H.3.6 Inspection to Identify Extent of Decontamination/Removal and to Verify Achievement of Closure Standard

Attainment of a 'clean debris surface' will be verified by a visual inspection in accordance with the standard that states: A clean debris surface means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices and pits shall be limited to no more than 5 percent of each square inch of surface area. (40 CFR 268.45, Table 1).

Areas of degraded surface material, such as significant concrete cracking or heavily gouged steel, will be evaluated by non-destructive or destructive means to determine depth of significant surface defects, amount of contamination present in the defects, and to determine if environmental contamination has resulted from the material defect.

The SAL tank and ancillary waste piping will be evaluated for meeting the clean debris standard by use of fiber-optic cameras or other nondestructive examination techniques.

H.4 Maximum Waste Inventory

The 325 HWTUs are used to store and treat a variety of different research-and-operations-related dangerous waste. The maximum inventory of waste that could be present at any one time in the 325 HWTUs Dangerous Waste Management Units (DWMU) is given in the following table.

Activity	HWTU	SAL Containers	SAL Tank	Cask Handling Area	Truck Lock	3714 Pad
Storage (liters)	9000	3000	1218	10370	10370	17620
Treatment (liters/day)	946	568	1218	10370	10370	17620

H.5 Schedule for Closure

Completion of closure activities for units at the 325 HWTUs OUG is expected to take up to two years from the date of receipt of the final volume of waste at the units. This extended time for closure is necessary due to as low as reasonably achievable (ALARA) concerns present in the facility, particularly the six interconnected hot cells. Closure activities are summarized in Table H.2, and a detailed schedule of closure activities is provided in Table H.3.

H.6 Extension for Closure Time

H.6.1 Extension for Inventory Removal

An extension of the time for removal of the inventory of dangerous waste from container treatment/storage unit(s) being closed designated for closure is requested for the 325 HWTUs. Acquiring disposal approvals and arranging shipping to receiving facilities for mixed waste requires longer than the 90 days anticipated under WAC 173-303-610(4)(a). The expected time needed to remove all waste from container treatment/storage units being closed is 180 days. For waste in the tank and hot cells, the expected time to complete inventory removal is two years.

The extended period for removal of the inventory of dangerous waste is needed to accomplish the procedures that are needed to safely work with the ALARA concerns that are present. All activities required to remove the inventory of dangerous waste will be conducted in accordance with applicable Permit conditions and all safety systems will continue to be operated. The removal of the inventory of dangerous waste will be conducted following procedures that are designed to be protective of the workers and the environment.

H.6.2 Extension for Closure Period

An extension of the closure time is requested for the 325 HWTUs units being closed. The ALARA concerns that are present necessitate this extension. The expected time needed to close the units is two years.

The extended closure period exceeding the 180 days given in WAC 173-303-610(4)(a) is needed to accomplish the procedures that are needed to safely work with ALARA concerns that are present in the SAL. All closure activities will be conducted in accordance with applicable Permit conditions and all safety systems will continue to be operated. Closure activities will be conducted following procedures that are designed to be protective of the workers and the environment. [WAC 173-303-610(4)(b)(i)]

H.7 Closure Cost Estimate

An annual report outlining updated projections of anticipated closure costs for the Hanford Facility TSD units having final status is not required per Permit Condition II.H.

Table H.1. Analysis Parameters for Closure of the 325 Hazardous Waste Treatment Units

Parameter and EPA SW-846[a] Analytical Method	Equipment and Structures Wipe Samples	Decontaminati on Waste Water Samples	Soil Samples (if determined to be contaminated)
pH for corrosivity (Method 9040 or 9045)		X	
Ignitability (Method 1010 or 1020)		X	
TCLP (Extraction Method 1311) • Metals (Method 6000 and/or 7000 series) • Volatile organics (Method 8240) • Semivolatile organics (Method 8270) • Chlorinated pesticides (Method 8080)		X	
Total metals: antimony, arsenic, beryllium, boron, cadmium, chromium, lead, mercury, nickel, selenium, silver, and thallium (Method 6000 and/or 7000 series)	X		X
Volatile organics (Method 8240)	X		X
Semivolatile organics (Method 8270)	X		X

[a] SW-846 = EPA Test Methods for Evaluating Solid Wastes (Third Edition, latest update, 1986).

Table H.2. Summary of Closure Activities for the 325 Hazardous Waste Treatment Units

Closure Activity Description	Expected Duration (a)	
	Container Unit(s)	SAL Hot Cells/Tank
Receive final volume of dangerous waste	N/A	N/A
Notify Ecology that closure activities will commence (at least 45 days before final closure activities begin)	N/A	N/A
Remove waste inventory and package, manifest, and transport all dangerous waste for treatment, storage, and/or disposal	180 days	780 days
Initial decontamination	120 days	120 days
Remove equipment	270 days	270 days
Records review and visual inspection of structural surfaces, equipment, troughs, and tanks to identify areas of contamination and to determine levels and methods of decontamination required	30 days	30 days
Decontaminate structural surfaces, equipment, troughs, and tanks using methods determined after records review and visual inspection	180 days	180 days
Decontaminate front face and rear face of hot cells	N/A	120 days
Reinspect surfaces to verify clean debris standard is met	2 days	2 days
Evaluate best methods for treatment and disposal of waste resulting from decontamination	25 days	25 days
Dispose of waste resulting from decontamination	80 days	80 days
Submit certification of closure to Ecology (within 60 days of completion of final closure activities)	N/A	N/A

(a) Some activities are performed concurrently.

Table H.3. Closure Schedule for the 325 Hazardous Waste Treatment Units

Action	Schedule	
	Container Units	Hot Cells and Tank
Date of receipt of last volume of waste	Day 0	Day 0
Completion of waste inventory removal	Day 180	Day 780
Equipment decontamination or disposal and visual inspection of structural surfaces to identify areas of contamination and to determine level of decontamination needed	Day 530	Day 1210
Structural decontamination	Day 635	Day 1315
HWTU sump and fire water containment tank and SAL hot cells trough and tank decontamination	Day 650	Day 1330
Visual inspection to determine effectiveness of decontamination	Day 690	Day 1370
Further decontamination and visual inspection, if necessary, and disposal of all decontamination waste based on results of waste analyses	Day 720	Day 1400
Clean closure certification	Day 780	Day 1460

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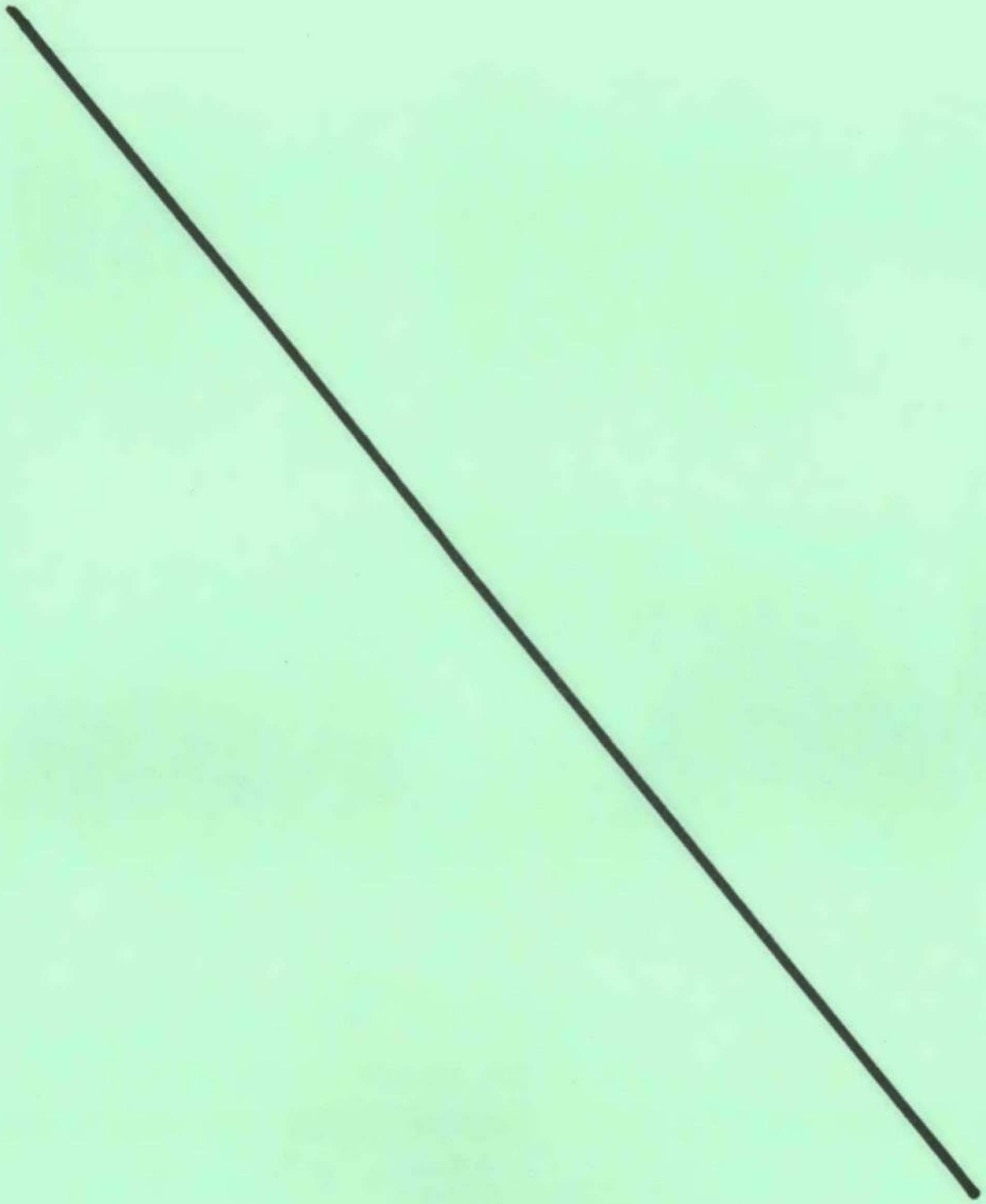

ADDENDUM I
INSPECTION REQUIREMENTS

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ADDENDUM I
INSPECTION REQUIREMENTS

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I. INSPECTION REQUIREMENTS

I.1 Inspection Plan

The purpose and intent of implementing inspection procedures at the 325 Hazardous Waste Treatment Units (HWTU) are to prevent malfunctions, deterioration, operator errors, and/or discharges that might cause or lead to the release of regulated waste to the environment or threats to human health. This Addendum describes the system of daily and weekly inspections involving various Pacific Northwest National Laboratory (PNNL) departments and levels of management to meet this intent.

I.1.1 General Inspection Requirements

This section identifies the content and frequency of inspections required at the 325 HWTUs.

I.1.1.1 Daily Inspections

Types of Problems. Specific inspection points are:

- Container integrity.
- Mislabeled or opened containers.
- Improper storage (e.g., incompatible waste storage).
- Disorderliness or uncleanliness of storage unit.
- Accumulation of waste in containment systems.

Frequency of Inspection: The 325 HWTUs staff performs daily inspections whenever waste packaging, transfer, shipping, or movement operations are conducted. Unit personnel monitor container condition and integrity, the containment system, and other building areas daily where waste is handled.

Results of these daily inspections are documented as part of the 325 HWTUs operating record.

I.1.1.2 Weekly Inspections

The 325 HWTUs personnel conduct weekly inspections of both safety and operating equipment in the 325 HWTUs. Safety and emergency equipment are inspected for functionality and adequacy of supply. The weekly and daily inspections are usually conducted on or before the last working day of each week, and have the same inspection points. Results of these weekly inspections are documented as a part of the 325 HWTUs operating record.

I.1.1.3 Quarterly, Once Every Four Months, and Annual Inspections

The Hanford Facility 300 Area Fire Department performs a once-every-four-months inspection of fire suppressant and notification systems (i.e., sprinkler system and fire alarm pull boxes). This inspection includes flow tests of the sprinklers to ensure that there is no blockage in the system lines; the alarm system is activated to ensure proper pull box operation. Annually, the Fire Department performs a full inspection of the sprinkler system, smoke detectors, heat detectors, and pull boxes. A complete flow test of the sprinkler system is performed from the furthest valve to ensure proper flow through the entire system. Fire extinguishers also are checked for proper pressure and function. The Hanford Fire Department retains these records.

Additional documented inspections are performed quarterly of the emergency eyewash/shower units, the fume hoods, and other ventilation system components. Records of these safety equipment inspections and the results, as well as documentation of any required corrective actions, are maintained by the appropriate facilities and operations staff.

I.1.1.4 Frequency of Inspections

The frequency of inspections is based on specific regulatory requirements and on the rate of possible deterioration of equipment and probability of environmental or human health incidents.

Areas where dangerous and mixed waste are actively handled, including all of the hot cells, the front and back face of the SAL, and Rooms 520, 524 and 528 in the HWTU are considered to be areas subject to spills. These areas are given daily inspections when in use as required by WAC 173-303-320(2)(c).

The primary and secondary containment systems (i.e., floors, troughs, and sumps) are inspected daily when in use for accumulation of spilled material. The containment systems are inspected weekly for structural integrity (i.e., no cracks, gaps, leaks that could result in environmental release of waste in the event of a spill). This frequency is based on the need to perform timely corrective actions in the event that problems are noted.

Aisle space between containers is inspected weekly when applicable. As the objective of the aisle space requirements is to allow for unobstructed movement of personnel and equipment in case of an emergency, the aisle space requirements do not apply to the hot cells, shielded cubicles, or storage cabinets. If quantities of waste are packaged in large containers or drums, temporarily stored before a transfer, a minimum aisle space of 76 centimeters is maintained in accordance with WAC 173-303-340(3), As-Low-As-Reasonably-Achievable (ALARA) concerns, and with applicable standards of the Uniform Building Code and Life Safety Code. Weekly inspections, where applicable, allow container spacing problems to be identified and corrected.

Emergency and safety equipment and personal protective equipment are inspected weekly. Weekly inspections will assure this equipment is available and in adequate supply.

I.1.2 Specific Process Inspection Requirements

The following sections detail the inspections to be performed at the 325 HWTUs.

I.1.2.1 Container Inspection

Dangerous and mixed waste containers stored in the 325 HWTUs are inspected daily where waste handling activities are performed for leakage, evidence of damage or deterioration, proper and legible labeling, and proper lid and bung closure. Any observations made during the inspections, including any repairs or remedial actions taken, are documented in the logbook with the date, time, and printed name and signature of the inspectors. This logbook is maintained in the 325 HWTUs for at least 5 years from the dates of the inspections. All areas subject to spills are inspected daily when in use. Structural integrity of the containment systems is checked weekly.

I.1.2.2 Tank System Inspection

The Shielded Analytical Laboratory (SAL) tank located in Room 32 is used to store mixed waste generated because of waste treatment activities. Routine inspections of the SAL tank system are conducted in accordance with WAC 173-303-640. Inspections involve a combination of visual, mechanical, and electronic means. Due to ALARA considerations, visual inspections of the tank system are conducted by remotely operated cameras mounted in Room 32. These visual inspections are limited to areas of the tank system that can be observed by the camera. In the event of a camera system malfunction, the tank system will be visually inspected from the doorway of Room 32 until the malfunction has been corrected. A mirror is mounted on the back wall of Room 32 to allow viewing the rear of the tank from the window in the door. A logbook or inspection sheet of all inspections is maintained in the operating record for at least 5 years from the date of the inspection.

I.1.2.2.1 Tank System External Corrosion and Releases

Aboveground portions of the SAL tank are inspected each operating day to detect corrosion or releases of waste.

I.1.2.2.2 Tank System Construction Material and Surrounding Area

The SAL tank is double walled and constructed of corrosion resistant stainless steel, with a capacity of 1,218 liters. The outer wall is a cylindrical stainless steel tank that provides containment sufficient to contain 100 percent of the inner tank volume.

The construction materials of the tank and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment systems, are inspected during use to detect erosion or signs of releases of mixed waste (e.g., wet spots).

Any deteriorations or malfunctions observed during inspection of the tank system will be corrected. Any release to the environment is reported immediately to Ecology, as required by WAC 173-303-640(7)(d)(i), and to the National Response Center as required by 40 CFR 302.

I.1.2.2.3 Tank System Overfilling Control Equipment

The tank controls for the SAL tank include two high-level alarm systems that respond to overfill conditions. The initial tank high-level alarm is activated by a conductivity probe, the second by a capacitance probe. The conductivity probe high-level alarm and associated functions can be tested electrically by depressing a button on the main control panel in Room 201. Activation of this alarm results in a visible red light and audible alarm on the main control panel in Room 201, an alarm condition on the annunciator panel on the second floor of the 325 Building, and closure of electric solenoid valves on all inlet water supply lines to the hot cell area and tank system. Activation of the capacitance probe alarm results in a red light and audible alarm.

I.1.2.2.4 Tank System Monitoring and Leak Detection Equipment

The leak detection conductivity probe for the SAL tank is located between the primary and secondary shells of the double walled tank. The leak detection probe signal activates if any liquids collect in the annulus between the two walls of the tank. The leak detection probe can be functionally tested electrically by depressing a test button on the main control panel in Room 201. A leak detection sensor is also installed in the secondary containment pan underneath the SAL tank and activates if liquids are detected in the pan.

I.1.3 Inspection Log

Copies of the completed inspection checklists are provided to operations personnel and maintained in the 325 HWTUs files. Any corrective actions noted or deterioration or malfunctions in equipment discovered by the inspector are delegated to responsible individuals in the operations group. Corrective actions identified must be completed within 2 weeks unless there is documentation and reason for further delay. Examples of problems that could be identified and the corresponding remedial action are listed in Table I.1. Inspection reports and corrective action response documentation are retained at the 325 HWTUs for a minimum of 5 years.

1

2 **Table I.1. Remedial Actions for Major Problems**

Major Problems	Remedial Actions
Containment system failures	
Cracks in floor of container storage area	Remove containers from area and cease use until cracks are repaired.
Cracks in floor of SAL cell liner	Remove containers from area and cease use until cracks are repaired, or provide secondary containment for containers holding liquid waste.
Leaking container in container storage area	Transfer waste to another container. Clean up spill.
Leaking tank or ancillary equipment	For minor leaks or drips, conduct inspection of affected equipment every 12 hours. For major leaks, immediately remove all waste from tank system. Prevent addition of waste to tank system until repaired. Notify Building Emergency Director. Initiate contingency plan if appropriate.
Spills	
Minor spills in container storage area	Clean up spill according to contingency plan.
Major spills in container storage areas	Notify Building Emergency Director. Initiate contingency plan if appropriate.

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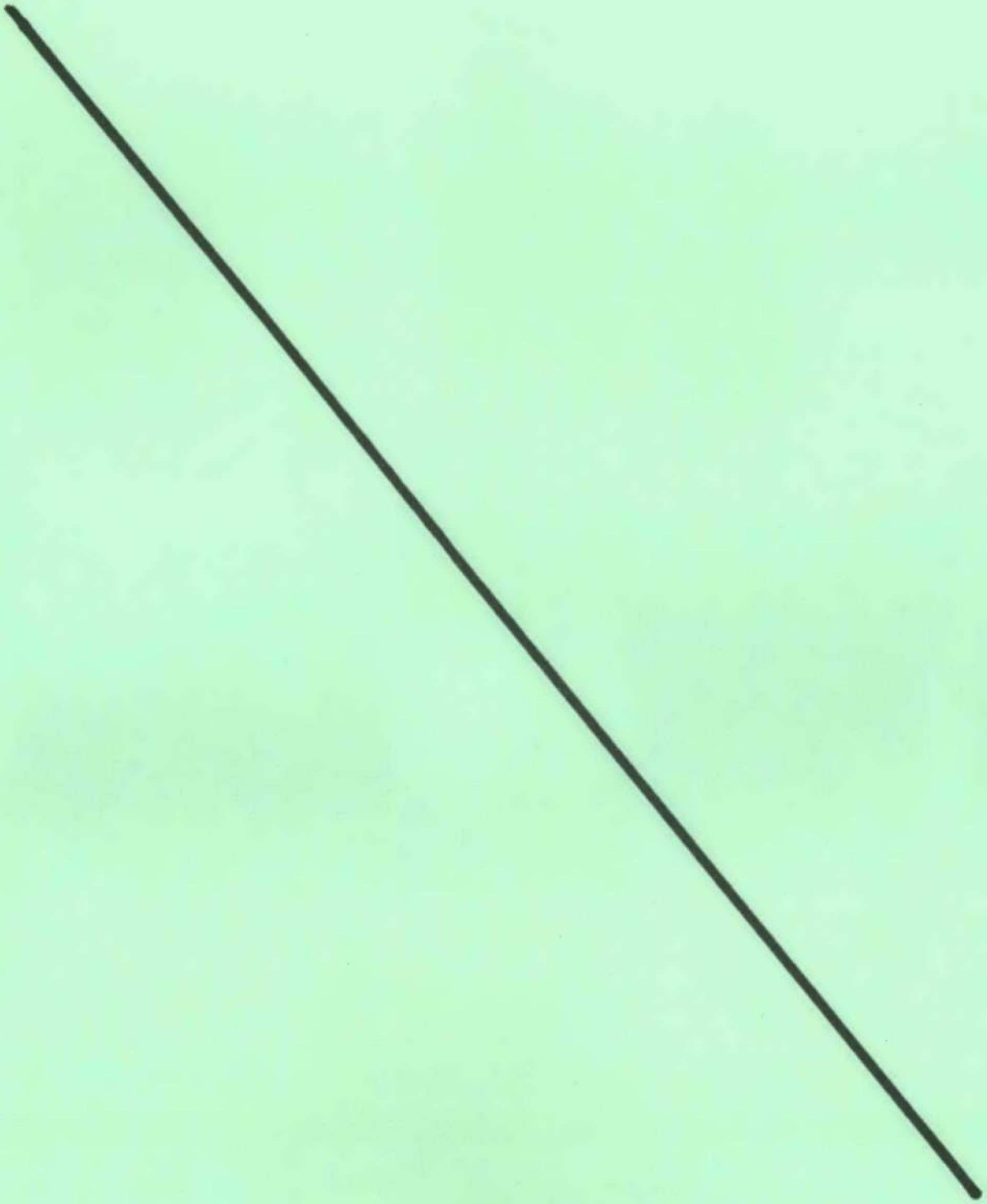

Addendum J — Building Emergency Procedure

325 Hazardous Waste Treatment Units
Location of Preparedness and Prevention, Contingency Planning, and Emergency Response Information Required by WAC 173-303-340, -350, and -360, -630, and -640

WAC Requirement WAC 173-303-XXX	**Permit Attachment 4** *Hanford Emergency Management Plan,* DOE/RL-94-02[1]	**Addendum J, 325 Building Emergency Procedure[2]**	**Permit, Part III, Operating Unit Group 5, 325 HWTUs[3]**
-340(1)(a), internal communications and alarms	Table 5-1	Section 10.3	Addendum F, Sections F.1.1.1 and F.1.1.2
-340(1)(b), device capable of summoning emergency assistance		Section 10.3	Addendum F, Sections F.1.1.1 and F.1.1.2
-340(1)(c), fire extinguishing, spill control, and decontamination equipment	Section 11.2.8 (Hanford Fire Department)	Sections 10.2, 10.4 and 10.5	Addendum F, Sections F.1.1.3 and F.2.5
-340(1)(d), water supply			Addendum F, Sections F.1.1.3 and F.1.1.4
-340(1)(d), periodic testing and maintenance	Section 11.3 (communications and alarms)	Section 3.4, second paragraph, 24th bullet	Addendum I, Sections I.1.1.2 and I.1.1.3
-340(2)(a), alarm availability		Section 10.3	Addendum F, Sections F.1.1.1 and F.1.1.2 Addendum C, Section C.1.2
-340(2)(b), immediate access to alarm by single person on premises		Section 10.3	Addendum F, Sections F.1.1.1 and F.1.1.2 Addendum C, Section C.1.2
-340(3), aisle space			Addendum F, Section F.1.2 Addendum C, Section C.1.2
-340(4), arrangements with local authorities	Sections 3.2.3, 3.3.1, 3.3.2, 3.4, 3.4.1.1, 3.4.1.2, 3.4.1.3, 3.7, and Table 3-1	Section 1.6	Permit Condition II.B.4, Permit Condition II.I.1.g and Attachment 6
-340(5), records of local authorities declining to make advance arrangements			Permit Condition II.I.1.g and Attachment 6
-350(1), contingency plan and implementation	Sections 1.1 and 4.2	Section 1.0	

[1] Revision 6, June 2014.

[2] Revision 14, 2/12/2015.

[3] Class 3 modification, May 2014 (325 HWTUs addenda); Permit Rev. 8C, December 2014 (general conditions and attachments).

-350(2), contingency plan and "one plan"	Sections 1.1 and 4.2	Section 1.0	
-350(3)(a), descriptions of actions personnel must take		Section 3.4, first and second paragraphs (building emergency director), Section 3.15, first and sixth bullets (all facility staff), and Sections 6.1, 6.2, and 6.3 (specific actions for fires, explosions, releases, odors)	
-350(3)(b), actions for damaged waste shipments		Section 6.2.3	Addendum B, §B.2.2.1.1.1.2 (activation of plan for damaged shipment)
-350(3)(c), description of arrangements with local authorities	Sections 3.2.3, 3.3.1, 3.3.2, 3.4, 3.4.1.1, 3.4.1.2, 3.4.1.3, 3.7, and Table 3-1	Section 1.6	
-350(3)(d), list of emergency coordinators		Section 3.1[4]	
-350(3)(e), list of emergency equipment	Section 11.2.8 (Hanford Fire Department)	Section 10 and Section 13, Attachments 1-3	Addendum F, Sections F.1.1.3 (emergency equipment) and F.2.5 (protective clothing)
-350(3)(f), evacuation signals and routes	Table 5-1 (signals), Figure 7-3 (routes)	Section 1.5 (signals), Section 13, Attachments 1, 2, 3, 7, and 8 (routes)	Addendum F, Section 1.1.1 (signals)
-350(4)(a), maintain copy at facility	Section 14.3.7 (copies of 94-02)	Section 2.1 (copies of 325 BEP)	Permit Condition II.I.1.e; Permit Attachment 6
-350(4)(b), provide copies to emergency response agencies	Section 14.3.7		
-350(5), amendment of plan	Section 14.3.1.1	Section 1.0	
-355(1), coordination with local agencies	Sections 3.2.3, 3.3.1, 3.3.2, 3.4, 3.4.1.1, 3.4.1.2, 3.4.1.3, 3.7, and Table 3-1	Section 1.6	
-355(2), use of computer models	Sections 1.3.3.2 and 2.2.2.3.3	Section 3.4, 2nd paragraph, 17th bullet (use of UDAC)	
-360(1), designation of emergency coordinator	Sections 1.3.4 (Incident Command) and 2.2 (designated BED for the facility)	Section 3.4, 1st paragraph and 2nd paragraph, 29th bullet	Addendum G, Section G.1 and Table G-1 (BED training)
-360(2)(a), activate alarms and notify agencies for assistance if needed	Sections 1.3.4 (incident command) and 2.2.1.1.3(b) (BED)	Section 3.4, 5th, 8th, and 16th bullets	
-360(2)(b), immediately characterize any release of materials	Section 2.2.1.1.3(g)	Section 3.4, 17th bullet	

[4] This information is not required pursuant to Permit Condition II.A.4 and is included only in order to avoid modification to the complete Building Emergency Procedure.

-360(2)(c), concurrently assess health and environmental threat	Sections 2.2.1.1.3(c), 4.2, 5.1.1, and 5.1.2	Section 3.4, 3rd and 17th bullets; Section 4 criteria	
-360(2)(d)(i), notify local authorities if evacuation required	Sections 2.2.1.1.3(e) and 5.1.1.2	Section 3.4, 8th bullet[5]	
-360(2)(d)(ii) and (e), notify Ecology and EPA	Sections 4.2 and 5.1.2.1	Section 3.4, 25th bullet	
-360(2)(f), measures to prevent occurrence, spread, or recurrence	Section 2.2.1.1.3(g)	Section 3.4, 17th bullet	
-360(2)(g), monitoring during facility shutdown	Section 2.2.1.1.3(g)	Section 3.4, 17th bullet	
-360(2)(h), provision for disposal of contaminated materials	Section 9.2.3	Section 9.2, first paragraph	Addendum F, Section 1.1.1.3 (management of contaminated water)
-360(2)(i)(i), prohibition of incompatible material	Section 9.2.3	Section 9.2, first and third paragraphs	Addendum F, Section 3.2 (management of incompatible wastes)
-360(2)(i)(ii), emergency equipment cleaned and fit for use	Section 11.2	Section 9.2, second paragraph and 9.3, last paragraph	
-360(2)(j), notification to Ecology prior to restart	Section 5.1.2.3	Section 3.4, 25th bullet; Section 3.20, second paragraph, and Section 9.2, third paragraph	
-360(2)(k), 15-day reporting	Section 5.1.2.2	Section 3.4, 25th bullet; Section 3.20, second paragraph, and Section 9.2, third paragraph	
-630(2), response to leaks from containers	Section 4.2	Section 3.4, 17th bullet; Sections 4 and 6.2	Addendum C, Section C.1.2 (repackaging of waste if container leaks)
-640(7)(d)(ii) and -640(7)(f), response to and reports of tank leaks	Sections 5.1.2.2 and 5.1.2.3	Section 3.4, 25th bullet; Section 3.20, second paragraph; Section 6.2; Section 9.2, third paragraph	Addendum C, Sections C.2.1.2.3 (non-emergency reporting) and C.2.1.2.4 (response to tank leaks)

[5] Any emergency requiring offsite evacuation constitutes an operational emergency and would meet one or more of the PNNL emergency action levels criteria.

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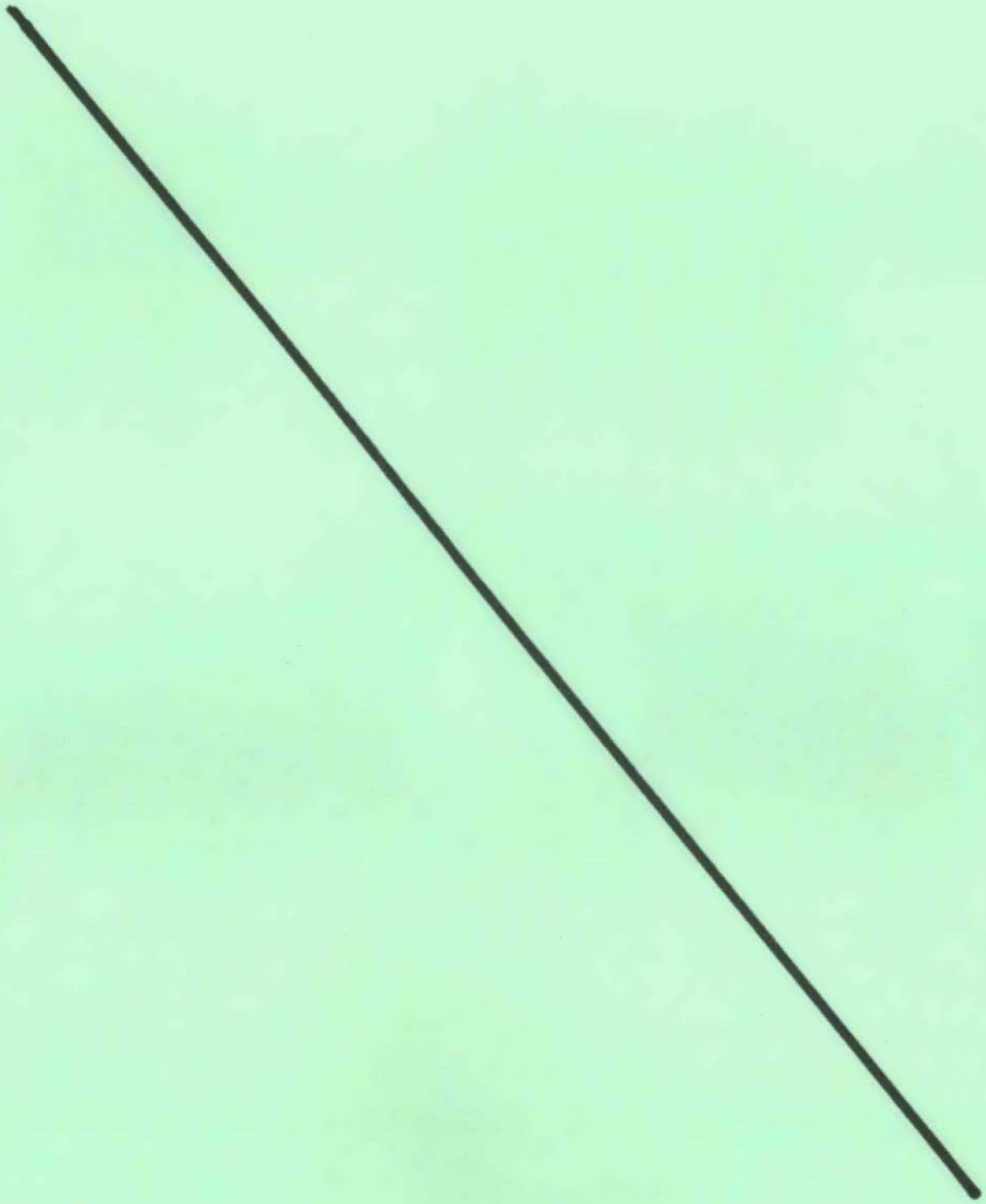

Pacific Northwest
NATIONAL LABORATORY

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F&O Building Emergency Procedure

BEP- 325/RPL

Building Emergency Procedure for Radiochemical Processing Laboratory (RPL)

Revision #	14
Revision Date	2/12/2015
Procedure Owner:	PT Saueressig
Author:	PT Saueressig
Approval:	RPL Manager, HF Kerschner
Concurrence:	Building Manager, PT Saueressig Emergency Preparedness, JE Kinzer Environmental Planning & Emergency Preparedness, JA Stegen Waste Operations Manager, TL VanArsdale Worker Safety & Health, EG Damberg RPL Operations Manager, EM Hanson
Work Location:	RPL/300 Area
Identified Hazards:	N/A *See Section 4.0*
SES/USQ Reviewer:	CS Dreyer
Applicable to RPL ONLY:	RPL-2015-058S
Use Category:	Reference Use

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Approval History for: BEP-325/RPL_R14, Building Emergency Procedure for the 325/RPL Building

Final Process State: APPROVED

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1.0 General Information

The Radiochemical Processing Laboratory (RPL)/325 Building Emergency Procedure (BEP) has been designed to provide information necessary to minimize risks to personnel, facilities, programs, and the environment in the event of an emergency. This procedure applies to all resident staff, visitors, vendors, and contractor/subcontractor personnel. If an event is of a security nature (bomb threat, hostage situation, or other act of violence), security procedures may supersede this procedure and will be assessed on a case-by-case basis.

This facility contains both radioactive and hazardous materials in operations, storage, and handling. The RPL facility poses a possible significant hazard to adjacent facilities, personnel, programs, and the environment.

This BEP includes the contingency plans and emergency procedures for hazardous waste management activities as referenced by the Washington Administrative Code (WAC) [173-303-340, -350, and -360]. This plan must be implemented whenever an emergency threatens human health and the environment[1].

Emergencies may arise from, but are not limited to the following:

- Fire
- Explosion
- Loss of service systems
- A medical emergency
- Bomb threats
- Criticality
- Criminal activity
- Incidents at other facilities
- Natural hazards or natural forces
- Spill/release to the environment requiring assistance
- Hazardous materials release.

Expected responses are those actions, which are intended to minimize the effects of a situation while providing optimum protection to personnel. Expected responses include notification to the PNNL Operations Center, Building Manager (BM), Building Emergency Response Organization (BERO), and personnel in the facility. This procedure also provides plans for notifying personnel to take safe actions such as "Take Cover," "Evacuate," or other planned actions dictated by the event. The procedure provides for formal notification and reporting.

Other emergency response agencies available to assist the Building Emergency Director (BED) and Incident Commander from offsite are described in DOE/RL 94-02, Section 3.0 [WAC 173-303-350 (3)(d)].

[1] Section 1.0 third paragraph: Permit requirement, Class 1 Modification 6/30/15.

The BED will provide BERO members BEP training annually. The BED and Alternate BEDs will receive annual training from the PNNL Emergency Preparedness office.

The policy of PNNL is to provide for the safety of its staff, contractor/subcontractor personnel, visitors, and members of the public in case of an emergency incident. PNNL line management has the responsibility to execute this policy and to see that all staff understand their responsibilities and know the action to be taken in an emergency. Every staff member is responsible for using the appropriate safety instructions and procedures and to remain alert to unsafe conditions or acts while performing his or her job. All personnel are responsible for responding to emergency conditions to minimize adverse impacts.

In the event of an emergency condition in the facility, members of the RPL BERO will perform their duties as described in this procedure. Specific emergency actions for response to events will be applicable as specified in this BEP. Those BERO members whose assistance is needed to mitigate a lesser event will be notified by telephone or personal contact by the BED or delegate. Occupants of the facility who are not members of the BERO shall follow the standard PNNL Emergency Preparedness requirements at HDI, *Basic Staff Practices*.

The building fire alarm is the primary means of evacuation and notification for full activation of the BERO. Emergency telephone numbers are listed in Section 3.0.

This procedure will be reviewed at least annually and amended if necessary or whenever any of the following occurs [WAC-173-303-350(5)]:

- The applicable regulations or the Hazardous Waste Treatment (HWTU's) permit is revised.
- The procedure fails in an emergency.
- The facility changes in a manner that materially increases or decreases the potential for fire, explosions, or release of hazardous waste or hazardous waste constituents, or in any way that changes the response necessary in an emergency.
- The emergency coordinating personnel list changes.
- The emergency equipment list changes[2].

1.1 Facility Name

Name: Radiochemical Processing Laboratory (RPL), 325 Building

Address: 325 Cypress St., 300 Area
Richland, WA 99354

EPA Generator Identification Number: **WA 7890008967**

1.2 Facility Location

The RPL Building is in the southern portion of the 300 Area, north of Cypress Street.

1.3 Owner/Operator

The RPL facility is owned/operated by DOE and co-operated by Pacific Northwest National Laboratory (PNNL). The RPL Manager is the senior line manager in the

[2] Section 1.0, eleventh paragraph: Permit requirement, Class 1 modification 6/30/15.

RPL and has overall responsibility for all aspects of operations in the RPL. The RPL Manager is part of the Nuclear Operations Division (NOD) within the Facilities & Operations (F&O) directorate. The RPL Building Manager reports directly to the RPL Manager and supports operations and maintenance in the facility. The RPL Building Manager is also the primary Building Emergency Director (BED).

1.4 Facility Description

The RPL, as referred to in this BEP, consists of the RPL Building, RPL Filter Building, the East Storage Yard located east of the RPL Building, and the North Storage Pad located north of the RPL Building.

The RPL Building houses laboratories and specialized facilities including general-purpose chemical laboratories, High-level Radiochemistry Facility (HLRF), Shielded Analytical Laboratory (SAL), fissionable material storage areas, and RPL Hazardous Waste Treatment Units (HWTUs). The general-purpose laboratories characterize fuel, single- and double-shell tank waste, environmental samples, fusion/tritium samples, and other wastes. The radiochemistry facility includes areas for glove boxes, hot cells, cask handling, storage, and isolation of isotopes for unique applications like medical use. Analytical laboratory operations are conducted on small amounts of highly radioactive materials such as samples of single-shell tank waste. The HWTU treats hazardous, mixed, low-level radioactive and transuranic waste.

The RPL Filter Building is located on the northwest corner of the main RPL structure and houses the final stage HEPA filters and the main exhaust fans.

The East Storage Yard is a fenced enclosure adjacent to the east side of the RPL Building and is designated as an outdoor Radioactive Material Area (RMA).

The North Storage Pad is the foundation pad of the former 328 Building and will be designated as an outdoor RMA.

Note: Footnotes in this document note the provisions in the BEP that are subject to RCRA permit# WA7890008967. These actions in the BEP implement RCRA permit requirements.

1.5 Hanford Site Emergency Sirens/Alarms[3]

Note: Some signals may not be applicable to the building; however, they may be heard in other parts of the Hanford Site. In the event of "Take Cover" alarm, the BERO will respond to the RPL lunchroom/lobby area for BED direction.

Signal	Meaning	Actions
Slow Whoop followed by voice message	Fire	Vacate building; proceed to staging area.
Steady tone on whistle, or siren	Area Evacuation	Vacate building; proceed to staging area Personnel in vehicles shall proceed to the nearest occupied facility and report to the staging area supervisor (SAS).
Wavering siren or short blasts on whistle or siren.	Take cover (Shelter)	Proceed to shelter or stay indoors. Close all exterior doors, turn off all intake ventilation (only if it can be done safely), and notify manager of whereabouts. Personnel in vehicles shall proceed to the nearest occupied facility and report to facility management. Staff should refrain from eating and drinking during a take cover event if physically able, until an appropriate evaluation of the event can be made.
AH-OO-GAH horn (howler) or flashing blue light (in high noise areas)	Nuclear criticality	Run at least 100 feet from building; proceed to staging area, along a path that does not take you closer to the building.
Variable color (red, amber) light with ringing bell or whistle	Airborne Radioactivity or Area Radiation Monitor	Stop work activities; immediately exit the area; notify Radiological Control personnel.
Communicator Notification System (CNS), telephone call displayed from 375-2124	PNNL Emergency Communications	Lift receiver, say "**HELLO**," listen to the message and follow the actions designated.
Telephone Notification System (TNS)	Hanford Site Emergency Communications	Lift receiver, say "**HELLO**," listen to the message and follow the actions designated. (**Note:** this system is only applicable to facilities on the Hanford site (i.e., 300/600 Areas)

1.6 Coordination Activities with Local Emergency Responders[4]

Interfaces and coordination with offsite agencies are in the planning, preparedness, response, and recovery elements of the Hanford Emergency Management Program. DOE has developed and maintains agreements to formalize areas of understanding, cooperation, and support with offsite agencies. These agreements are applicable to all

[3] Section 1.5: Permit requirement, Class 1 Modification 6/30/15.

[4] Section 1.6: Permit requirement, Class 1 Modification 6/30/15.

Hanford facilities, including the RPL. Summaries of these memoranda of agreement (MOA) are given in Table 3-1 of the *Hanford Emergency Management Plan* (DOE/RL 94-02).

1.7 Deviations from Technical Safety Requirements

Emergency actions that depart from an approved TSR may be taken when no actions consistent with the TSRs are immediately apparent, and when these actions are needed to protect workers, the public, or the environment from imminent and significant harm.

Such actions shall be approved, as a minimum, by the RPL Building Manager, the RPL Manager, or the RPL BED. If emergency actions are taken, verbal notifications shall be made to the PNSO within two hours and by written reports to DOE Headquarters within 24 hours. [TSR AC 5.11]

2.0 Purpose of the Building Emergency Procedure

This procedure describes the processes and information necessary in the event of an emergency for the RPL BERO members to react to the emergency and to perform the following actions:

- Maximize safety, minimize risk to life, and provide prompt efficient treatment for injured persons.
- Provide all members of the BERO with an understanding of their roles and responsibilities in the event of an emergency.
- Minimize the effects on the health and safety of personnel, property, the environment, programs, and the public.
- Provide prompt internal and external notifications to the responsible authorities.

2.1 Distribution

At a minimum, controlled document copies of this BEP will be located at the following locations:

- BED emergency response bag
- RPL Power Operator Office (Room 900)
- Building Manager's file
- 325 HWTUs Operating Record[5]
- EP Program Office
- PNNL Operations Center
- Hanford Emergency Operations Center (Hanford Site facilities only)
- Management Support Group emergency response bag (LSB/2D55)
- Alternate Incident Command Post (350 Building room 161)

The RPL BEP may be viewed and/or printed at https://facilities.pnl.gov/weblinks/BEP/325/BEP-325.pdf. Copies of the BEP that are printed from this website are considered uncontrolled copies.

[5] Section 2.1, fourth bullet: Permit requirement, Class 1 modification 6/30/15.

2.2 Acronyms

BED	Building Emergency Director
BEP	Building Emergency Procedure
BERO	Building Emergency Response Organization
BM	Building Manager
CAM	Continuous Air Monitor
CAS	Criticality Alarm System
CMS	Chemical Management System
CNS	Communicator Notification System
CSM	Cognizant Space Manager
DOE	Department of Energy
EAL	Emergency Action Level
EIP	Emergency Information Posting
EOC	Emergency Operations Center
EP&RP	Environmental Protection & Regulatory Programs
EPA	Environmental Protection Agency
ESM	Electronic Storage Media
FOS	Facility Operations Specialist
FSR	Field Services Representative
HDI	How Do I
HFD	Hanford Fire Department
HLRF	High-Level Radiochemistry Facility
HWTU	Hazardous Waste Treatment Unit
IC	Incident Commander
ICP	Incident Command Post
IOPS	Integrated Operations System
LA/LAI	Limited Area Island
MIT	Map Information Tool
MSG	Management Support Group
NOD	Nuclear Operations Division
ONC	Occurrence Notification Center
PIV	Post Indicator Valve
PNNL	Pacific Northwest National Laboratory

PNSO	Pacific Northwest Site Office
POC	Patrol Operations Center
PPE	Personnel Protective Equipment
RBA	Radiological Buffer Area
RCRA	Resource Conservation and Recovery Act
RPL	Radiochemical Processing Laboratory
RPT	Radiological Protection Technologist
SAL	Shielded Analytical Laboratory
SAS	Staging Area Supervisor
SDS	Safety Data Sheet
SME	Subject Matter Expert
TDP	Testing Designated Position
TNS	Telephone Notification System
TSD	Treatment, Storage, Disposal
WAC	Washington Administrative Code

2.3 Making Changes to the BEP

PNNL-MA-110, *Emergency Management Plan* requires the BED to keep the Emergency Preparedness Office (EPO) advised of any changes to the BEDs. This may be accomplished by memo to the EPO. The Hazardous Waste Treatment Unit (HWTU) Permit Coordinator and the RCRA Subject Matter Expert are also required to be notified before any changes are made to the BEP.

To request revisions to this procedure, refer to ADM-001, *Document Production & Distribution.*

3.0 Building Emergency Response Organization

3.1 Emergency Telephone Numbers [WAC-173-303-350(3)(d)]

In the event of an emergency, specific detailed facility information may be needed. Knowledge of the building, utilities, and radiation hazards can be obtained from the staff listed below. Contact the PNNL Security Operations Center at 375-2400 if unable to contact these staff members using the numbers provided.

Any Emergency – PNNL Security Operations Center: 375-2400			
Note: With the appropriate approval, BED home addresses can be obtained at the PNNL Security Operations Center.			
***Building Emergency Director (BED)**[6] Paul T. Saueressig	**Office:** 375-5352	**Home:** N/A	**Cell:** 619-3873
***BED1** Eric M. Hanson	**Office:** 375-5351	**Home:** N/A	**Cell:** 713-0860
***BED2** (HF) Skip Kerschner	**Office:** 375-5345	**Home:** 396-0593	**Cell:** 554-4369
***BED3** Chris S. Dreyer	**Office:** 375-5468	**Home:** 628-9995	**Cell:** 420-0533
Additional F&O Management Contacts:			
Utility Operations WTL, TJ Vanderlinden	Office: 375-2829		Cell: 521-8024
Nuclear Operations WTL, Don Cravens	Office: 375-5398		Cell: 948-1053
Fire Protection Engineer: Dan Kester	Office: 371-7383		Cell: 308-9108
Safety & Health Rep: Jason Sweesy	Office: 372-4122		Cell: 438-4974
F&O Mgt Support Group: Reed Sharp	Office: 371-7042		
EOC RPL Tech Reps: Karl Pool	Office: 375-5246		
Randy Thornhill	Office: 375-5220		Cell: 851-6769
Franciska Steen	Office: 375-5546		
Unique Program Laboratory Expertise			
Waste Mgt – 90-Day: Zane Turner	Office: 375-5088		Cell: 554-4359
Low Level TSDs: Trevor VanArsdale	Office: 375-3814		Cell: 531-6441
Environmental Compliance Rep: John Holland	Office: 375-5002		Cell: 521-1211
Alternate Incident Command Post: 350 Bldg./Room 161	Office: 376-7565 Fax: 376-7965		
Environmental Support Contact *(regulatory notifications only)*	375-2400 375-1648		
Richland Fire Department	375-2400		
Medical and First Aid	375-2400		
Hazardous Materials Response Team (Benton Franklin County Hazardous Material Response Team	375-2400		
Ambulance Services	375-2400		
Police Department	375-2400		
PNNL Duty Officer(s) & PNNL Info Line	375-2124		
Off Normal Event Reporting	375-2400		
Work related injury/illness of a non-emergency nature: PNNL Occupational Health Clinic, LSB 1st Floor section E	371-7848		

** These are Testing Designated Positions (TDP) per HDI, Perform Substance Abuse Testing. Any changes to these positions require coordination through the Testing-Designated Position (TDP) Administrator.*

[6]Section 3.1, BED information: Permit requirement, Class 1 Modification 6/30/15. See Permit Condition II.A.4.

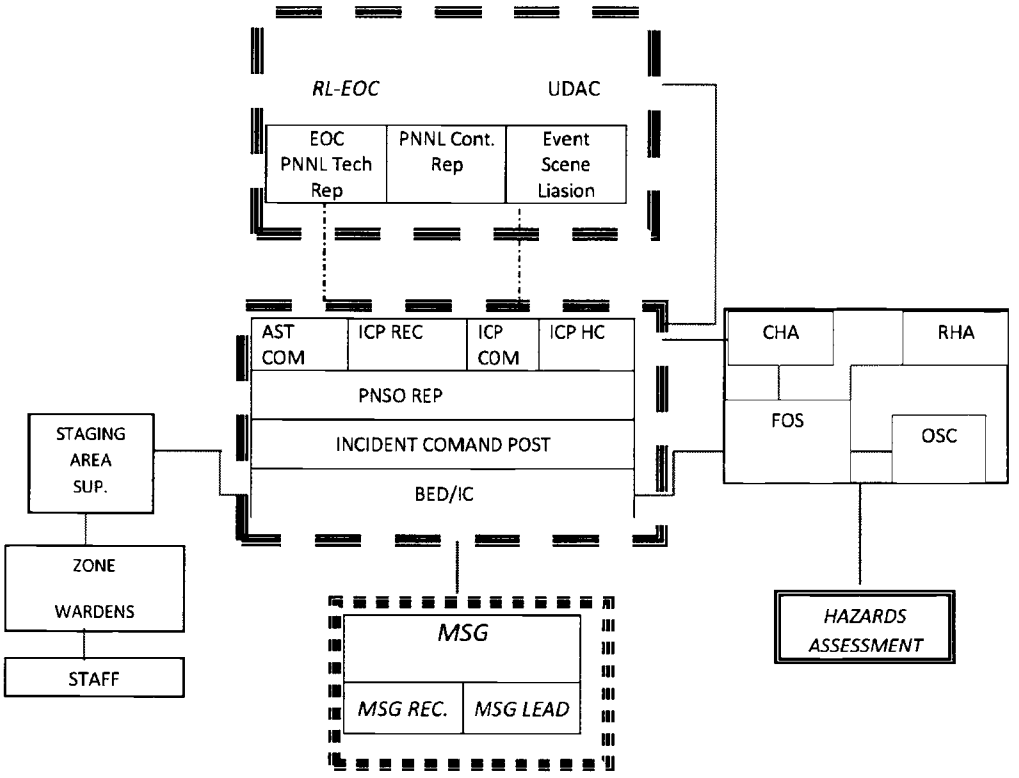
3.2 Building Emergency Response Organization (BERO)

The RPL BERO is an emergency response organization with clearly defined responsibilities. The BERO consists of pre-designated and trained individuals who have been assigned emergency response activities associated with the RPL. In addition, other positions and/or personnel in the RPL have responsibilities associated with emergency responses, preparedness, and notifications.

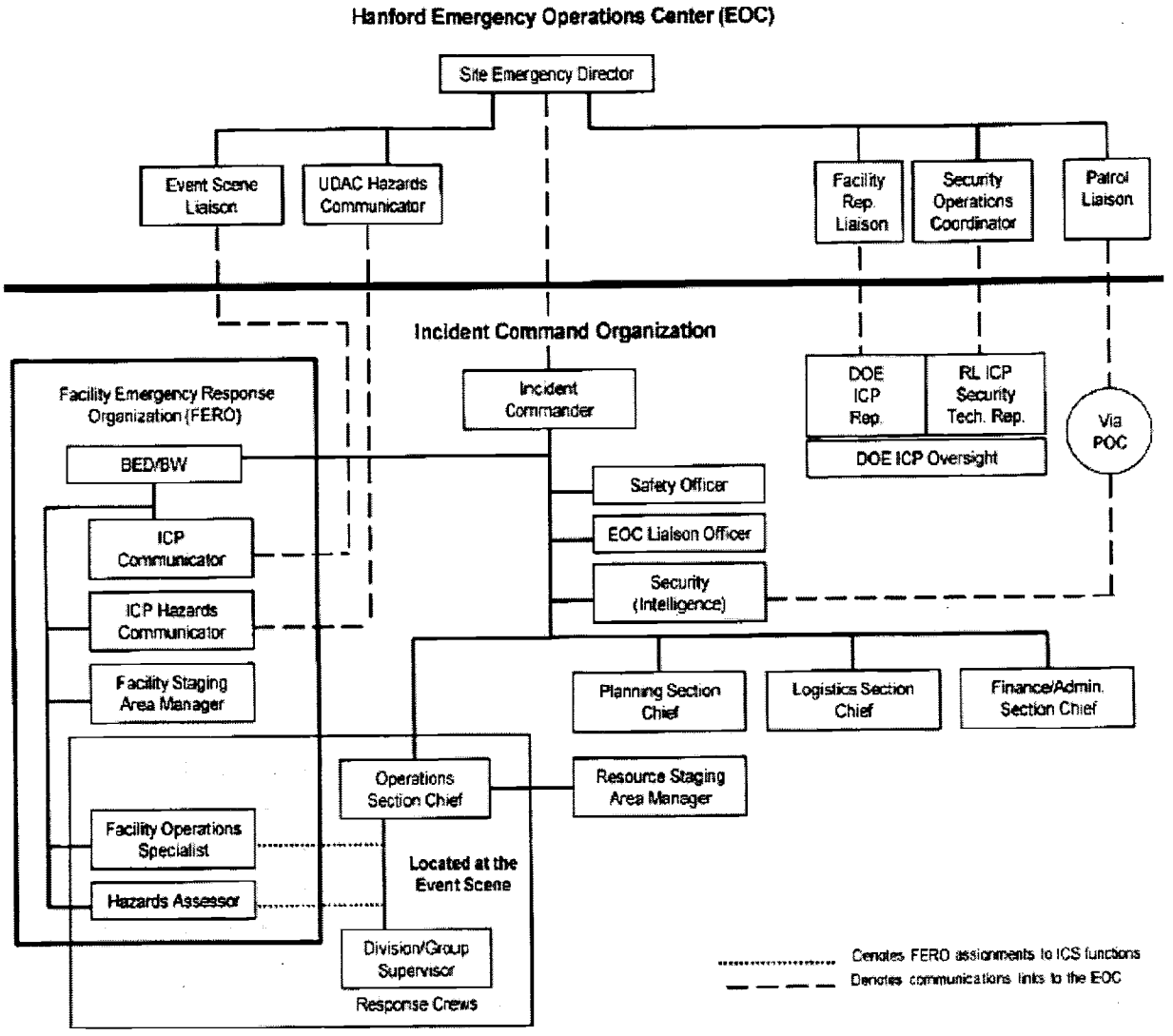
BERO Position	Primary Responder	1st Alternate	2nd Alternate
*ICP Communicator	**Christopher Dreyer** Work: 375-5468 Cell: 420-0533 Home: 628-9995	**Teresa Campbell** Work: 375-5119 Cell: 947-0332 Home: 943-6122	
Assisting Communicator	**Scott Colby** Work: 375-5350 Cell: 554-1780	**Kathy Hall** Work: 375-5346 Cell: 528-5954	
Chemical Hazards Assessor	**Jason Sweesy** Work: 372-4122 Cell: 438-4974	**Mike Zabel** Work: 375-5013 Cell: N/A Home: 378-4278	**Doug Falk** Work: 371-7097 Cell: 308-9101 Home: 967-5063
ICP Hazards Communicator	**Terry Milham** Work: 375-5007 Cell: 539-3910 Home: 627-0200	**Bob Free** Work: 375-5597 Cell: 521-5916 Home: 627-0200	**Steve Ruisi** Work: 375-6656 Cell: 528-6451 Home: N/A
Radiological Hazards Assessor	**Lorna Brown** Work: 375-5006 Cell: 948-2577 Home: N/A	**Jenny Martin** Work: 371-7788 Cell: 374-7581 Home: 628-0561	**Holly Black-Kania** Work: 371-6930 Cell: 539-7283 Home: NA
ICP Recorder	**Terri Mars** Work: 375-5661 Cell: 539-0722	**Kathy Hall** Work: 375-5346 Cell: 528-5954	
*Facility Operations Specialist	**Dan Wandler** Work: 375-5179 Cell: 438-1053 Home: 438-1053	**John Logan** Work: 375-5168 Cell: 438-2079 Home: 438-2079	**Johnny Trevino** Work: 375-5177 Cell: 554-8531 Home: N/A
Staging Area Supervisor	**Deborah Coffey** Work: 375-5011 Cell: 586-909-2122 Home: 543-7244	**Teresa Schlotman** Work: 375-5323 Cell: NA Home: NA	**Jake Bohlke** Work: 375-5553 Cell: 303-9613 Home: NA
PNSO Facility Representative	**Tom Davies** Work: 372-4100 Cell: 509-392-9872 Home: 627-3345	**Jeff Carlson** Work: 372-4750 Cell: 509-539-2044 Home: 582-9769	**Rob Yasek** Work: 372-4023 Cell: 509-554-4471 Home: 371-8105

** These are Testing Designated Positions (TDP) per HDI subject area Workplace Substance Abuse. Any changes to these positions require coordination through the Testing-Designated Position (TDP) Administrator.*

3.3 BERO – EOC Interface



Legend			
AST	Assisting	IH	Industrial Hygienist
BED	Building Emergency Director	MSG	Management Support Group
CHA	Chemical Hazards Assessor	OSC	Operations Section Chief
COM	Communicator	REC	Recorder
CONT	Contractor	REP	Representative
EOC	Emergency Operations Center	RHA	Radiological Hazards Assessor
FOS	Facility Operations Specialist	SUP	Supervisor
HC	Hazards Communicator	UDAC	Unified Dose Assessment Center
IC	Incident Commander		
ICP	Incident Command Post		



3.4 Building Emergency Directors and Alternates

The BED has the responsibility for the welfare and safety of the building personnel and for directing efforts to control, evaluate, and terminate the event if the building is the site of an event. The BED performs duties of the Emergency Coordinator as prescribed under the WAC [WAC 173-303-360] until relieved by the Incident Commander, and has the authority to commit the resources needed to carry out the BEP.

The BED manages facility operations and personnel during an emergency and is responsible for implementation of appropriate emergency procedures and their

follow-up, 24 hours a day. The BED has the authority to commit the resources necessary to carry out emergency plan activities[7]. Activities include:

- Directing configuration control over facility systems and components at the event scene.
- Activating the BERO.
- Assessing the event scene[8].
- Allocating personnel to conduct facility-specific emergency response actions within the affected facility boundary (including acting as or delegating duty as the Facility Operations Specialist (FOS) and taking appropriate protective actions in response to events occurring in other onsite geographic areas or adjacent facilities).
- Categorizing the incident and notifying the PNNL Environmental Support Contact and/or the EOC Shift Office[9].
- Communicating with the Environmental Protection & Regulatory Programs.
- Initiating establishment of a Management Support Group (MSG).
- Reviewing the Emergency Action Levels (EAL) criteria (PNNL-EAL-RPL) and providing an initial EAL classification to the EOC Shift Office[10].
- Directing implementation of initial preplanned area/site protective actions.
- Identifying an alternate staging area in the event of an extended building evacuation during inclement weather.
- Determining personnel accountability status.
- Performing the necessary steps in the BED Hazardous Material Facilities (RPL) Checklist.
- Verifying other BERO positions use checklists as appropriate.
- Verifying that preservation of evidence at the event scene is taken into consideration during the event.
- Developing and transmitting event reports to maintain accurate and complete records of events, decisions, and actions during an event.
- Verifying the appropriate alarms are sounded when necessary[11].
- Providing information and assistance to the responding agencies as requested to mitigate the event, including:
    - Identifying the character, exact source, amount, and extent of any released materials.

[7] Section 3.4, first and second paragraph text: Permit requirement, Class 1 Modification 6/30/15.
[8] Section 3.4, second paragraph, third bullet: Permit requirement, Class 1 Modification 6/30/15.
[9] Section 3.4, second paragraph, fifth bullet: Permit requirement, Class 1 Modification 6/30/15.
[10] Section 3.4, second paragraph, eighth bullet: Permit requirement: Class 1 Modification 6/30/15.
[11] Section 3.4, second paragraph, sixteenth bullet: Permit requirement: Class 1 Modification 6/30/15.

  - Taking reasonable measures (e.g., stopping processes/operations, collecting/containing released waste, removing/isolating containers) necessary to make sure that fires, explosions, and releases do not occur, recur, or spread to other dangerous waste.
  - Monitoring for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment as appropriate[12].
- Approving reentry and/or rescue operations.
- Arranging care for any injured persons and contacting their line management.
- Notifying the HWTU permit personnel of any planned changes to the BEP.
- Verifying hazardous spill/release events are logged in the HWTU operating records.
- Taking appropriate actions during adverse chemical conditions see HDI, *Response to Normal Chemical Spills/Adverse Chemical Conditions (Exhibit).*
- Providing a thorough turnover to the Hanford Site emergency responder (e.g., Hanford Fire Department, Hanford Patrol, etc.).
- Maintaining emergency equipment[13].
- Verifying that the environmental support contact will provide any necessary notifications to regulatory agencies such as the Washington State Department of Ecology and verifying that required written reports to regulatory agencies are completed within 15 days of event termination[14].
- Performing an annual review and update of the BEP.
- Planning, conducting, and documenting results of building emergency drills.
- Informing the Emergency Response Organization of any changes in RPL BEDs.
- Being thoroughly familiar with the following:
  - The RPL BEP
  - All operations and activities
  - Locations and characteristics of waste handling
  - Locations of all records
  - Physical layout of the building and area of responsibility[15].

3.5 Incident Command Post (ICP) Communicator

The individual responsible for conveying the event emergency classification to the EOC Shift Office, phoning the POC at (9)911, or 373-0911 (cell) to initiate a conference telephone bridge between the POC, EOC Shift Office, and ICP

[12] Section 3.4, second paragraph, seventeenth bullet: Permit requirement, Class 1 Modification 6/30/15.
[13] Section 3.4, second paragraph, twenty-fourth bullet: Permit requirement, Class 1 Modification 6/30/15.
[14] Section 3.4, second paragraph, twenty-fifth bullet: Permit requirement, Class 1 Modification 6/30/15.
[15] Section 3.4, second paragraph, twenty-ninth bullet: Permit requirement, Class 1 Modification 6/30/15.

Communicator. Initiates and maintains a communication line between the Event Scene Liaison at the DOE-EOC and the ICP. As a precautionary measure, the BED makes sure that this position is staffed for all events. The ICP Communicator is responsible for completing Incident Command Post Communicator Checklist.

3.6 Assisting Communicator

Provides assistance to the ICP Communicator as directed by:

- Keeping the IC and BED aware of all transmitted and received information.
- Maintaining a log of communications sent and received.
- Establishing and maintaining a communication line with the Technical Support Representative (376-7148) in the DOE-EOC and the ICP throughout the incident.

3.7 Incident Command Post (ICP) Recorder

Records in a time-line format, event-related notifications and activities associated with the direction administered and information received at the ICP.

3.8 Management Support Group (MSG) Lead

The Facilities Operations & Engineering Division (FO&ED) Manager or delegate will respond as the Management Support Group (MSG) leader when requested by the BED.

Note: The MSG lead function and alternates is a TDP in accordance with HDI, *Workplace Substance Abuse.*

The MSG Lead will convene the appropriate staff to fill positions in the MSG as the incident requires. The MSG Lead is also responsible for notifying the PNNL Laboratory Director, other PNNL senior management as appropriate, and DOE-PNSO. The purpose of the MSG is to support the BED by being a resource for technical information, event mitigation strategies, event termination and recovery plans, and other support as directed/requested by the BED/IC. The coordination of support activities to the IC/ICP for a declared emergency on the Hanford Site is managed by the Hanford EOC.

A representative from DOE-PNSO has been established to coordinate with the MSG during large events. In smaller events, a DOE-PNSO Facility Representative coordinating with the BED will provide information and support to DOE-PNSO management regarding actions occurring at the event scene.

3.9 Management Support Group Liaison

Reports to the ICP to facilitate communications between the BED/IC and the MSG. The MSG liaison is responsible for the following:

- Establish phone communications with the MSG as needed to communicate with the MSG.
- Convey BED/IC requests for MSG support to the MSG.
- Communicate information from the MSG to the BED, IC, or other appropriate BERO members.

3.10 Staging Area Supervisor

The Staging Area Supervisor (SAS) will direct all activities at the building staging area and is responsible for:

- Assisting in personnel accountability by receiving the status of building occupancy from the zone wardens and then informing the BED of facility status with regard to personnel, or if help is needed to locate or account for missing personnel.
- Assisting in area evacuation and Take Cover.
- Assisting with communications.
- Supporting the BED as requested.
- Maintaining a log of their activities or assigning a log-keeper to do so.
- Completing the RPL Staging Area Supervisor Checklist.

3.11 Zone Wardens

Zone wardens provide the results of their accountability sweeps information to the BED via the SAS and assists in additional duties as determined by the BED. To accomplish this function, the zone wardens:

- confirms that assigned zones have been vacated by staff and determines if aid and/or rescue is required
- aids those who need help in evacuating the building if it can be done safely
- reports the occupancy status of the assigned zone and any additional observations to the Staging Area Supervisor
- assists the Staging Area Supervisor as requested
- maintains a familiarity with the BEP
- becomes knowledgeable of any staff in assigned zones who may require assistance in an emergency event.

Note: The function of the zone warden is to verify (when possible) that assigned zones have been evacuated as a means of assisting other emergency responders and to verify the locations of building personnel. The function of zone wardens does not include search and rescue; they should not enter any area they feel presents a hazard to them. Once the evacuation alarm is sounded, zone wardens should not enter any location in the facility where there are indications that a hazard may exist. The indications include such things as visible smoke, fire, unusual odors, local alarms, criticality alarms, spilled chemicals, incapacitated personnel, etc. If a zone warden is not in the facility when the evacuation or take cover alarm is initiated, is a significant distance from their assigned zones, or has been isolated from their zone, they should report to the SAS at the staging area that their zone was not swept.

3.12 Facility Operations Specialist (FOS)

The FOS is responsible for the immediate mitigative actions at the event scene that cannot be delayed without threatening human health and/or the environment. The FOS is responsible for meeting emergency responders at the event scene and providing information on event status and initial actions that are underway. This position will serve under the direction of the BED and coordinate with the Hanford Fire Department or Hanford Patrol Operations Section Chiefs, upon their arrival, and will provide facility expertise to support operations section activities. The FOS is responsible for implementing the Facility Operations Specialist Checklist and maintains a log of activities, conversations, and directives given and received.

3.13 Hazard Communicator

The Hazard Communicator is a facility or process knowledgeable individual responsible for communicating data received from the Hazards Assessors to the Uniform Dose Assessment Center (UDAC) for further consequence assessment during DOE-declared emergencies. This position is staffed only during DOE-declared emergencies at the request of the BED/IC. The Hazard Communicator:

- Establishes and maintains an emergency response organization (ERO) communication line with the UDAC Hazards Communicator to provide incident scene radiological or chemical data as reported by the Hazard Assessors.
- Keeps the IC and BED aware of all transmitted and received information.
- Maintains a log, or assigns a log-keeper to record all activities, including the date and time information was received or the time when action was taken.
- Responds to requests for information from the UDAC and assures that requests for information are relayed to the Hazards Assessor(s) for response.
- Implements the Hazards Communicator Checklist.

3.14 Hazards Assessors

There are two different Hazards Assessors for the RPL facility. One assessor deals with radiological hazards and the other deals with chemical hazards.

3.14.1 Radiological Hazard Assessors

The radiological hazards assessors are responsible for coordinating and verifying accomplishment of radiological control functions throughout the event. This position coordinates with the operations section chief at any location and supervises radiological protection technologist (RPT) activities.
The RHA is responsible for implementing the checklisted duties for non-declared RCRA emergencies and DOE-declared emergencies, as appropriate. In conjunction with the CHA, this individual will make recommendations for PPE to the Hanford Fire Department (HFD).

3.14.2 Chemical Hazard Assessors

This position may be staffed by an industrial hygienist assigned to support the HFD HazMat team, HFD medical staff, and HFD-safety officer. The CHA will provide technical expertise in chemical and toxicological hazard identification, evaluation, reactivity, and dispersion modeling at the incident

scene. The CHA may also serve as a chemical/decontamination safety officer, if designated by the IC.

The RPL CHA initially reports to the ICP for an event briefing and then coordinates with the HFD Operations Section Chief; he/she provides technical support for non-radiological hazardous material response. Typically, the RPL industrial hygienist and the industrial hygienist assigned to the HFD, HFD Medical Staff, or HFD Safety Officer staff this position. In conjunction with the RHA, this individual will recommend PPE to the HFD-safety officer.

3.15 Individual Staff Member Responsibilities

- Announces or activates the appropriate alarm, calls the PNNL Security Operations Center (375-2400), and notifies management upon observing an emergency[16].
- Avoid exposure to harmful and life-threatening conditions.
- During emergencies, if it can be done safely, secure classified documents and electronic storage media (ESM) before leaving limited areas. If this cannot be done without endangering yourself: 1) take the classified documents and ESM with you, if time permits; 2) report to the staging area and; 3) inform the BED and then call 375-2400 to report an incident of security concern.
- If evacuating due to a fire alarm and you are wearing special PPE or anti-contamination clothing, segregate yourself from others at the staging area until surveyed by a RPT.
- Provide the BED with any information to assist in evaluating the emergency condition.
- Remain at the staging area and follow the instructions of the BED and SAS[17].
- Read and understand the Emergency Information Posting (EIP) and BEP.
- Become familiar with the location of the BEP on the RPL webpage and HDI, *Basic Staff Practices*.
- Wear your Emergency Preparedness information card.
- Know where the nearest fire alarm pull box is located.

Note: When evacuating the RPL due to a fire or a criticality alarm, all personnel are required to exit the radiological control area(s) without performing radiological exit surveys. Those personnel shall segregate themselves from others at the staging area until surveyed by RPT's.

3.16 PNNL Incident Manager

For more complex events such as those affecting multiple PNNL-managed facilities and/or extending over multiple days, the PNNL Incident Manager (IM) may be activated and will assume responsibility for incident management, including managing the overall event on behalf of PNNL, overseeing BEDs, and coordinating

[16] Section 3.15, first bullet: Permit requirement, Class 1 modification 6/30/15.

[17] Section 3.15, sixth bullet: Permit requirement, Class 1 modification 6/30/15.

with the PNNL MSG. The PNNL IM will most likely be activated by the MSG Lead. Primary BEDs will continue to manage operations at their facilities, but the overall incident management and distribution of resources will be the responsibility of the PNNL IM.

3.17 Facility Visitor Responsibilities

The safety of building visitors is the responsibility of the facility host who shall assure that visitors are provided a safe and orderly evacuation. The facility host will report the visitor status to the SAS as soon as is practical after an evacuation.

3.18 Supervisors/Manager Responsibilities

Account for all staff members. Report missing or injured members to the SAS and if requested, assist the SAS.

3.19 Unique Program Laboratory Expertise

The technical knowledge of specific programs/laboratory activities are usually known by the laboratory occupant or program manager. When applicable, cognizant space managers (CSMs), alternate CSMs, and team leads may be contacted in regards to emergencies or off-normal events in assigned laboratories. Hazard Awareness Summaries containing this information are posted throughout the facility.

Rooms 201, 202 and 529 are less than 90-day Radioactive Hazardous Waste Accumulation Areas.

The Treatment, Storage, and Disposal (TSD) areas consist of the following rooms: 32, 200, 201, 202, 203, 520, 524, 528, 610, 3714 pad, and portions of 603 and 604A.

These rooms may contain significant quantities of hazardous waste for short periods of time. This waste can be radioactive, toxic, corrosive, ignitable, reactive, carcinogenic, or environmentally persistent according to the WAC [WAC 173-303].

No one will enter these rooms without permission from one of the individuals whose names are posted on the door.

Wastes stored in these rooms could have significant environmental or health hazards. Incidents involving any of these locations will require hazardous materials expertise by the responders.

3.20 Environment, Safety, and Health Advisor Responsibilities

Provides guidance for establishing safety requirements for mitigation and recovery actions, which include coordinating any support needed from other disciplines of the PNNL Environment, Health, Safety, and Security (EHS&S) Directorate (i.e., Environmental Compliance Representatives (ECR), Radiological Control, Hygiene, and Field Services Representatives [FSR]). The ECRs and FSRs conduct activities within specific hazardous waste management activity areas and provide support to the BED in case of an emergency.

The environmental support contact (375-2966) will provide any necessary notifications to regulatory agencies such as the Washington State Department of

Ecology and transmit required written reports to regulatory agencies within 15 days of event termination[18].

3.21 Line Management

The responsibilities of line management include the following activities:

- accounts for staff members
- reports missing or injured staff members to the Staging Area Supervisor
- assists the Staging Area Supervisor if requested
- performs the necessary actions addressed in HDI
- acts as a health advocate for injured/ill staff members
- keeps the BED informed of changes in programmatic activities that could affect an emergency event
- provides or verifies training for staff members.
- provides training for unescorted visitors for whom he/she is responsible
- keeps the BED and Zone Wardens informed of staff members who may require assistance in an emergency event.
- Providing staff who are residents in the RPL, or are qualified Fissionable Material Handlers with a Personal Nuclear Accident Dosimeter (PNAD).

Line management has the responsibility to assure that each PNNL staff member performing work in or having unescorted access approval into the RPL reviews this BEP annually and documents the review with their training coordinator.

3.22 New Staff Assigned to RPL

All new assignees to the RPL facility shall complete initial training within 10 working days of assignment. All temporary personnel with unescorted access are required to receive this training before beginning work in the RPL facility.

[18] Section 3.20, second paragraph: Permit requirement, Class 1 Modification 6/30/15.

4.0 Implementation of the BEP[19]

The decision to implement the BEP should be made whenever unusual or emergency conditions exist that require the response of facility and/or emergency personnel and the establishment of an ICP.

For RCRA events, the BEP must be implemented and the Washington State Department of Ecology notified if all the following criteria are met:

1. The event involves an unplanned spill, release, fire, or explosion;

AND

2a. The unplanned spill or release involves a dangerous waste, or the material involved becomes dangerous waste as a result of the event (e.g., product that is not recoverable),

OR;

2b. The unplanned fire or explosion occurred at a facility or transportation activity subject to RCRA contingency planning requirements;

AND

3. Time-urgent response from an emergency services organization is required to mitigate the event or a threat to human health or the environment exists.

- Based on evaluation of the event, the BED or alternate BED will implement the BEP to the extent necessary to protect human health and/or the environment. The BED has the authority to commit the resources necessary to carry out the actions required by the BEP.
- The BED will direct that additional checklists that are identified in the BEP be initiated and completed. When the materials and quantities involved in the incident have been identified, it should be possible to evaluate the magnitude of the hazard.

During an emergency event, the BED will take all reasonable measures to assure that fires, explosions, and releases do not occur, recur, or spread to other dangerous waste in the facility. Measures include stopping processes and operations, collecting and containing released waste, and removing or isolating containers as appropriate.

In any emergency, priority is given to protection of the health and safety of persons in the immediate area. Containment and cleanup are secondary choices. When responding to minor spill events, onsite personnel will generally perform immediate cleanup of minor spill or releases using facility equipment. Remediation of such spills and releases would not normally constitute activation of the BEP. A spill or release of dangerous waste is considered 'minor' if **ALL** of the following are true:

- The spill is either contained, or if outside a secondary containment, is minor in quantity (generally less than 10 gallons of liquid or 100 pounds of solids);
- The composition of the material or waste is known and can be immediately determined from the label, manifest, SDS, or other records;
- The spill does not threaten the health and safety of building occupants such that an area evacuation is necessary;

[19] Section 4.0: Permit requirement, Class 1 Modification 6/30/15.

- Response personnel have appropriate training and equipment to expeditiously remediate the spill or release.

Unless stamped and numbered as a Controlled Copy, the online version is the official version of this procedure. Before using a printed copy, verify that it is the most current version by checking the revision number against an official copy.

5.0 Facility Hazards

The RPL contains both radioactive and hazardous chemicals that pose a potential hazard to the public, adjacent facilities, personnel, programs, and the environment during an emergency. Because the location of hazardous materials and equipment within the facility can change on a frequent basis due to specific research needs, a variety of informational tools have been created and integrated into daily operations. Some of the tools available within the facility are the Map Information Tool (MIT), Chemical Management System (CMS), the RPL Operating Envelope webpage, and the Integrated Operations System (IOPS) which includes the Hazard Awareness Summaries for each hazardous space in RPL.

5.1 Hazardous Materials

The RPL building contains hazardous materials including:

- Chemicals exhibiting one or more hazards such as corrosives, oxidizers, flammable solids and liquids, poisons, etc.
- Radioactive materials.
- Hazardous wastes, including listed wastes and waste exhibiting one or more characteristics such as corrosivity, reactivity, ignitability, toxicity, and/or environmental persistence.
- Mixed wastes (wastes containing both radioactive and hazardous components).

Hazards associated with these materials vary depending on type, quantity, and concentration of the material(s) involved in the incident as well as the type of incident.

During an emergency, the PNNL CMS may be consulted to determine the identity and quantity of hazardous chemicals located in affected areas of the facility. The listing of satellite and 90-day accumulation areas (available on the Environmental Protection & Regulatory Programs webpage) may be consulted to identify the location and type of wastes (hazardous and mixed) in the facility. The inventory of waste stored in the RPL RCRA permitted unit may be determined by consulting with EP&RP personnel.

Arrangements for local response agencies (fire, police, and medical and emergency response teams) are required to assist in pre-emergency planning. These arrangements include familiarization with the properties of dangerous waste handled at the facility and associated hazards. The Emergency Preparedness Office provides these coordination efforts with input from individual BEDs and others as appropriate.

5.2 Physical (Industrial) Hazards

The RPL building contains industrial hazards such as high-voltage equipment, high-temperature equipment, elevated work areas, and overhead hazards. Refer to the IOPS Hazard Awareness Summaries that are posted at the entrance to each space for specific details.

5.3 Dangerous Mixed Waste

See Section 5.1. Refer to the MIT to identify the location of any dangerous mixed waste location in a specific room.

5.4 Radioactive Materials

See Section 5.1. Refer to the MIT to identify the location of any dangerous mixed waste location in a specific room.

5.5 Criticality

The RPL building is a Hazard Category 2 non-reactor nuclear facility designed as a multi-purpose research facility. Fissionable materials are stored in various locations designated controlled areas throughout the building. A fissionable material line manager and fissionable material handler supervisor are assigned responsibility for each controlled area.

The RPL Documented Safety Analysis (DSA) analyzed various scenarios regarding potential criticality incidents and establishes a Nuclear Criticality Safety Program as a safety management program. The Nuclear Criticality Safety Program evaluates fissionable material handling and storage at the RPL and provides engineered features, limits, and administrative controls necessary to assure the possibility of a criticality event remains extremely unlikely.

The criticality safety risk of firefighting within each controlled area is evaluated and areas posted with appropriate symbols when a limitation on the use of water or other extinguishing agents is warranted. These limitations are also identified within the Hanford Fire Department Pre-incident Plan.

A criticality accident at the RPL is a credible event. A criticality alarm system is maintained to mitigate the impact of an accidental criticality on facility staff and visitors through rapid notification and an immediate evacuation. The system is tested on a semiannual basis.

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6.0 Potential Emergency Conditions and Appropriate Response

6.1 Explosion/Fire/Fire Alarm[20]

Note: During these events, it is likely that facility integrity may be compromised and that the facility will also experience a concurrent loss of electrical power and/or control of the building ventilation systems. If this is the case, refer to Sections 6.2, *Hazardous Material/Dangerous or Mixed Waste Spill* and Section 6.6, *Loss of Electrical Power/Reduced Ventilation* for concurrent actions as appropriate.

If you are involved with, or are in close proximity to an explosion, a fire, or discovery of a fire, or have indication that the fire alarm is sounding, perform the following:

6.1.1 Fire/Explosion

6.1.1.1 Sound the alarm by pulling the fire alarm pull box. See the guidance for the exception to this step below.

Exception to pulling the fire alarm: If a simple and safe action can be taken that will immediately and positively extinguish a small fire (e.g., pulling the plug on a malfunctioning lab instrument, isolating a fuel source such as quickly closing a valve that is immediately at hand, smothering the flame), then pulling the fire alarm pull box is not necessary, and the fire may be extinguished prior to calling the PNNL Security Operations Center at 375-2400.

Note: If appropriate, the BED will classify the event using the RPL EALs.

6.1.1.2 Evacuate the building through the nearest exit that can be safely used.

6.1.1.3 Once in a safe location, notify the PNNL Security Operations Center at 375-2400 and provide the following information (if known):

- Nature and location of the event.
- If the conditions of the event appear to be degrading, (i.e., the fire appears to be escalating or building structures are being compromised).
- Your name and callback telephone number.
- Time event began or was discovered.
- Report the number of any injured personnel.
- If known, include the following: name(s) and amount(s) of any chemical(s) that are involved or may be burning as a result of the fire.

Note: The fire department can be notified directly by calling (9) 911 or 373-0911 (cell). If the fire department was contacted using this option, also call the PNNL Security Operations Center at 375-2400 as soon as possible to initiate PNNL management notification and emergency response.

[20] Section 6.1: Permit requirement, Class 1 Modification 6/30/15.

6.1.1.4 If time permits, and without putting yourself in jeopardy, you may fight the fire under the following conditions:

- You have directed someone to pull the fire alarm pull box.
- You have verified that someone has called the PNNL Security Operations Center at 375-2400, (9) 911 or 373-0911 (cell).
- If you are willing, able, and knowledgeable about the selection of fire extinguisher and its use.

Note: Fire extinguishers equipped with the glove piercing tips are for HFD use only.

- If the fire is in a hot cell, attempt to smother the fire, or for a large fire, put the fire out using the fire extinguishing system, if you are trained to do so.
- If the fire is in a glove box, do not attempt to fight the fire using the gloves. Isolate supply air to the glove box if safe to do so.
- If the fire is small and you know what material is burning, the fire does not involve significant quantities of hazardous materials and does not present a personnel exposure hazard to smoke or significant heat.

6.1.1.5 If you have chosen to fight the fire, and after the fire is believed to be out, call the PNNL Security Operations Center at 375-2400 and inform them of your actions.

- Unless there are significant amounts of smoke or fumes, remain in the proximity of the fire to verify that the fire does not re-flash.
- In the event the fire re-flashes, perform these actions starting with Step 6.1.1, and do not attempt to fight the fire on your own.

6.1.2 Fire Alarm

Note: If appropriate, the BED will classify the event using the RPL EALs.

6.1.2.1 If time permits, and without placing yourself in jeopardy, perform the following:

- Verify equipment is shutdown or is in a safe configuration.
- Verify nuclear materials are secured.

6.1.2.2 Zone wardens perform an accountability sweep of their assigned areas.

6.1.2.3 Evacuate the building through the nearest exit that can safely be used.

6.1.2.4 Assemble at the staging area located at the lower south parking lot, south end of lane #9.

a. Zone wardens report the status of their accountability sweep to the SAS.

b. If classified materials (documents, electronic storage media, test materials, etc.) are removed from the Limited Area (LA) or left unsecured within the LA:

- Inform the SAS that classified material has been left in an unsecured condition or has been removed from the LA.
- Call the PNNL Security Operations Center at 375-2400 and report the details surrounding the classified materials security event.
- The SAS shall provide information to the BED concerning the classified material.

c. Personnel who are wearing PPE clothing or are suspected of being contaminated shall be segregated from other building occupants and shall be surveyed by radiological control personnel. PPE will be discarded as directed by the RPT.

d. Zone wardens and all staff are to remain at the staging area and follow the instructions of the BED.

6.2 Hazardous Material/Dangerous or Mixed Waste Spill[21]

Note: If appropriate, the BED will classify the event using the RPL EALs.

6.2.1 For minor spills/releases that are relatively small in size, perform the following:

Note: A spill or release of dangerous waste is considered "minor" if ALL of the following are true. If not, refer to section 6.2.2.

- The spill/release either is contained or, if outside of a secondary containment, is minor in quantity (generally less than 10 gallons of liquid or 100 pounds of solids).
- The composition of the material or waste is known and can be immediately determined from the label, manifest, SDS, or other records.
- The spill/release does not threaten the health and safety of building occupants such that a building evacuation is necessary.
- Response personnel have appropriate training and equipment to expeditiously remediate the spill or release.

6.2.1.1 Move personnel away from the substance.

6.2.1.2 Notify nearby personnel of the emergency.

6.2.1.3 Prevent personnel exposure by restricting access to the spill area by setting up barricades, closing doors, etc.

6.2.1.4 Notify the PNNL Security Operations Center at 375-2400 and provide the following:

- Nature and location of the event.
- Name(s) of chemicals involved, amounts, sources, and known hazards about the chemicals.

[21] Section 6.2: Permit requirement, Class 1 Modification 6/30/15.

- If the spill has been contained.
- If any material has been released to the environment.
- Any corrective actions in progress.
- Name(s) of anyone contaminated or injured in connection with the incident.
- Other hazards that may or may not be related to the spill.
- Time incident began or was discovered.
- The current status of the event, i.e., spill contained or not contained, etc.
- Name, location, and callback telephone number of person reporting the incident.

6.2.1.5 Notify the BED, CSM, and the safety and health representative.

6.2.1.6 Take steps to contain the spill/release IF and only IF:

a. The identity of the substance is known.

b. The hazards of the substance are known (flammable, toxic, radioactive, corrosive material) and can either be controlled or they do not present an immediate threat.

c. Appropriate PPE and control/cleanup supplies are readily available.

d. The individual(s) performing the task have had training related to spill/leak control and can safely perform the action(s) without assistance, or assistance is readily available from other trained personnel.

6.2.1.7 Steps to contain the spill/release may include, as appropriate:

a. Build a containment of absorbent materials and restrict access to the affected area.

b. Tighten closures; tip the container to stop the leak, use plugging, or patching materials or over packing.

c. Perform initial cleanup of the spill area by transferring contents to appropriate non-leaking containers using the appropriate procedures and tools.

6.2.2 For a major spill/release, or tank spills, perform the following actions.

Note: If appropriate, the BED will classify the event using the RPL EALs.

6.2.2.1 If the spill/release threatens the health and safety of building occupants such that a building evacuation is necessary, initiate a building evacuation by pulling the fire alarm. If a building evacuation is not necessary, continue at section 6.2.2.2.

a. Assemble at the staging area located at the lower south parking lot, south end of lane #9.

1. Zone wardens report to the SAS.
2. If classified materials (documents, electronic storage media, test materials, etc.) are removed from the LA or left unsecured within the LA:
    - Inform the SAS that classified material has been left in an unsecured condition or has been removed from a LA.
    - Call the PNNL Security Operations Center at 375-2400 and report the details surrounding the classified materials security event.
    - The SAS shall provide information to the BED concerning the classified material.
3. Personnel who are wearing PPE clothing or are suspected of being contaminated shall be segregated from other building occupants and shall be surveyed by radiological control personnel. PPE will be discarded as directed by the RPT.
4. Zone wardens and all staff are to remain at the staging area and follow the instructions of the BED.

6.2.2.2 Move personnel away from the substance.

6.2.2.3 Notify nearby personnel of the emergency.

6.2.2.4 Notify the PNNL Security Operations Center at 375-2400 and provide the following:

- name, location, and callback telephone number of person reporting the incident.
- name(s) of chemical(s) involved and amount(s) involved in the incident.
- location of incident (identify as closely as possible and include information about multiple building numbers).
- time incident began or was discovered.
- where the materials involved are going or might go, such as into secondary containment, under doors, through air ducts, etc.
- source and cause, if known,
- name(s) of anyone contaminated or injured in connection with the incident.
- any corrective actions in progress.
- anyone else who the discoverer has contacted.
- any known hazards.

- where and when the chemical condition or spill occurred.
- if any material was released to the environment (e.g., to a stack or a sewer system).
- the status of the situation.

6.2.2.5 Prevent personnel exposure (e.g., set up barricades).

6.2.2.6 Contact the Cognizant Space Manager (CSM).

6.2.2.7 Notify the safety and health representative.

6.2.2.8 Take steps to contain the spill ONLY IF ALL THE FOLLOWING EXIST:

- The identity of the substance is known.
- The hazards of the substance are known (flammable, toxic, radioactive, corrosive material) and can either be controlled or they do not present an immediate threat.
- Appropriate protective equipment and control/cleanup supplies are readily available.
- The individual(s) performing the task have had training related to spill/leak control and can safely perform the action(s) without assistance, or assistance is readily available from other trained personnel.

6.2.2.9 Initiate actions to mitigate a tank spill/leak using trained personnel:

- Stop the source of the leak if possible (shutting valves, turning off pumps, etc.).
- Prevent further additions of liquid to the tank.
- Visually inspect the tank system to determine the source of the leak.
- Within 24 hours, remove as much of the liquid from the tank as is practicable to prevent further leakage.
- Remove any leakage contained in a secondary containment within 24 hours or as soon as practicable.
- Prevent any further leakage or migration of the leak to soils or surface waters.

6.2.2.10 Notify the BED, the CSM, and the safety and health representative of any pertinent information that you may have.

- The discoverer of the spill will provide a synopsis of the event and the actions taken to the BED, CSM, and the safety and health representative.
- Upon completion of the event briefing, the BED will direct spill event mitigation activities.

6.2.3 For events that involve transportation and/or damaged packaging of hazardous material or dangerous waste that arrives at the RPL:

Note: If appropriate, the BED will classify the event using the RPL EALs.

6.2.3.1 DO NOT move the shipment.

6.2.3.2 Notify the BED, CSM, and the safety and health representative.

- The receiver of the shipment or discoverer of the damaged package will provide a synopsis of the situation and the actions taken if any, to the BED, CSM, and the safety and health representative.

6.2.3.3 The BED will evaluate the event and initiate appropriate actions for minor events/spills per Section 6.2.1 or 6.2.2 as appropriate.

- Treat any release from the package as a hazardous material spill and perform response actions as appropriate.

6.3 Unusual, Irritating or Strong Odors[22]

6.3.1 If an unusual odor is detected and the source is unknown, the type and location of the odor should be reported to the BED; the BED will determine the appropriate actions.

6.3.1.1 If the odor is determined to be potentially dangerous, then,

a. Initiate a building evacuation by pulling the fire alarm.

b. Assemble at the staging area located at the lower south parking lot, south end of lane #9.

c. Zone wardens report to the SAS.

d. If classified materials (documents, electronic storage media, test materials, etc.) are removed from the LA or left unsecured within the LA:

- Inform the SAS that classified material has been left in an unsecured condition or has been removed from the LA.
- Call the PNNL Security Operations Center at 375-2400 and report the details surrounding the classified materials security event.
- The SAS shall provide information to the BED concerning the classified material.

e. Personnel who are wearing PPE clothing or are suspected of being contaminated shall be segregated from other building occupants and shall be surveyed by radiological control personnel. PPE will be discarded as directed by the RPT.

f. Zone wardens and all staff are to remain at the staging area and follow the instructions of the BED.

[22] Section 6.3: Permit requirement, Class 1 Modification 6/30/15.

6.4 Potential Radiological Material Release

Note: If appropriate, the BED will classify the event using the RPL EALs.

Note: If readings are provided in Becquerel's. A Becquerel is a SI unit of radioactivity equal to one disintegration per second. Conversion to dpm (disintegration per minute): Multiply total Becquerel's by 60.

6.4.1 Area Radiation Monitor (ARM)

a. Stop work.

b. Alert personnel in the area.

c. Exit the RCA that is being monitored by the ARM.

d. Notify the RPT and the BED.

e. Notify the PNNL Security Operations Center at 375-2400.

6.4.2 Continuous Air Monitor (CAM) or ALPHA Sentry Cam

a. Stop work.

b. Alert personnel in the area.

c. Exit the area being monitored by the CAM and move into a separate air space.

d. Notify the RPT and the BED.

e. Notify the PNNL Security Operations Center at 375-2400.

6.4.3 Glove box differential pressure alarm

a. Stop work.

b. Alert personnel in the area.

c. Exit the immediate area.

d. Notify the RPT and the BED.

e. Notify the PNNL Security Operations Center at 375-2400.

6.4.4 Hot cell differential pressure alarm

a. Stop work.

b. Alert personnel in the area.

c. Exit the immediate area.

d. Notify the RPT and the BED.

e. Notify the PNNL Security Operations Center at 375-2400.

6.5 Criticality and Criticality Safety Limit Violations

6.5.1 In the event of a potential criticality safety limit violation perform the following:

6.5.1.1 The staff member discovering an actual or potential criticality safety limit violation shall follow these steps (also described in the operating documents):

a. Stop work immediately in the area without making any changes to present conditions.

b. Ensure that any fissionable materials or other equipment and materials close enough to interact with fissionable materials are not moved or disturbed.

c. Immediately notify the Building Manager; if not available call the PNNL Security Operations Center at 375-2400 and state the problem.

6.5.1.2 Upon notification, the Building Manager shall:

a. Call the PNNL Security Operations Center at 375-2400 and state the problem;

b. Notify the Fissionable Material Line Manager and supervisor for the controlled area; and

c. Contact the Nuclear Criticality Safety Program Manager 554-8987 or Nuclear Safety and Facility Authorization Manager 947-2344 to obtain nuclear criticality safety program staff support.

6.5.1.3 Upon notification, the Fissionable Material Line Manager shall:

a. Ensure that all work activities in the affected area are stopped; and

b. Post warning signs at appropriate locations requiring permission from the fissionable material line manager to enter the area.

6.5.1.4 Upon notification the Nuclear Criticality Safety Program Manager shall:

a. Confirm whether a limit violation exists; and

b. If limit has been violated determine if a second contingency still provides for prevention of criticality or other danger.

6.5.1.5 Criticality safety limit violations are identified as a loss of process-condition control in the *Event Classifiers Procedure*. The Building Manager shall initiate the associated reporting, critique, and corrective action process defined in the HDI, *Report and Event or Occurrence* work flow.

6.5.1.6 The Nuclear Criticality Safety Program Manager will assist the Building Manager in developing a recovery plan based on a thorough review of the situation and potential hazards associated with the violation.

6.5.2 In the event of a criticality alarm, perform the following:

Note: If appropriate, the BED will classify the event using the RPL EALs.

6.5.2.1 Leave the building immediately through the closest exit, do NOT stop for a survey and run 100 feet away from the facility.

6.5.2.2 Zone wardens are also directed to leave the building immediately without performing accountability sweeps of their zones.

> **Note:** Obstacles located within 100 feet of the building (fences, walls, trenches, etc.) may prevent running directly away from the building for 100 feet. Choose a path around these barriers that will maximize your distance from the building. When past the obstacle, continue directly away from the building until you are 100 feet from the building. See Attachments 1-3, *Emergency Equipment & Evacuation Routes* for suggested routes to the RPL Staging Area.

6.5.2.3 Proceed to the staging area along a path that does not take you closer to the building.

6.5.2.4 Assemble at the staging area located at the lower south parking lot, south end of lane #9.

a. Per RCP-8.1.02, initiate "Quick-Sort Survey of Personnel."

- Any positive quick sort must immediately be reported to the BED.

b. Zone wardens report to the SAS.

c. If classified materials (documents, electronic storage media, test materials, etc.) are removed from the LA or left unsecured within the LA:

- Inform the SAS that classified material has been left in an unsecured condition or has been removed from the LA.
- Call the PNNL Security Operations Center at 375-2400 and report the details surrounding the classified materials security event.
- The SAS shall provide information to the BED concerning the classified material.

d. Personnel who are wearing PPE clothing or are suspected of being contaminated shall be segregated from other building occupants and shall be surveyed by radiological control personnel. PPE will be discarded as directed by the RPT.

e. Determine the radiation dose levels at the staging area and in the evacuated area following a criticality accident.

f. Dose rates and report findings shall be reported to the BED.

g. Zone wardens and all staff are to remain at the staging area and follow the instructions of the BED.

6.6 Loss of Electrical Power/Reduced Ventilation

6.6.1 In the event of a loss of or a significant interruption to building electrical power and/or a reduction in ventilation flow, perform the following:

6.6.1.1 Place laboratory or room in safe condition per the following:

a. Verify fume hoods and sashes are closed.

b. Verify equipment is shutdown.

c. Verify nuclear material(s) are secure.

d. Verify that classified materials are secure.

e. Verify all hazardous materials are secure.

f. Verify that all equipment and heat generating devices inside of laboratory gloveboxes and inside of hot cells are shutdown.

6.6.1.2 If the building electrical power returns and/or standby power are still available:

a. Assemble in the lunchroom.

b. If classified materials (documents, electronic storage media, test materials, etc.) are removed from the LA or left unsecured within the LA:

- Inform the SAS that classified material has been left in an unsecured condition or has been removed from the LA.
- Call the PNNL Security Operations Center at 375-2400 and report the details surrounding the classified materials security event.
- The SAS shall provide information to the BED concerning the classified material.

c. Personnel exiting the radiological buffer areas (RBA) are expected to do so without surveying through the PCMs.

d. Personnel who are wearing PPE clothing or are suspected of being contaminated shall be segregated from other building occupants and shall be surveyed by radiological control personnel. PPE will be discarded as directed by the RPT.

e. Zone wardens for Zones 2 and 8 are requested to activate the flashing red warning lights.

f. Zone wardens and all staff are to remain at the lunchroom and follow the instructions of the BED.

g. Radiological surveys of the facility shall be performed prior to re-entry.

6.7 Natural Phenomena Events

Note: If appropriate, the BED will classify the event using the RPL EALs.

The natural phenomena events that are considered as having a probability of occurring and are addressed in this procedure are seismic event/earthquake, volcanic eruption/ash fall, high wind/tornado, flood, and range fire.

If these events were to occur, Hanford TNS messages will most likely be sent before, during, or immediately following the event. Regardless of the receipt of a phone message, the BED will direct activities within the facility in accordance with this procedure and provided by phone messages as appropriate.

Should it become necessary to evacuate the facility, the BED will report the evacuation to the PNNL Security Operations Center at 375-2400, and the EOC Shift Office at 376-2900.

6.8 Bomb Threats/Suspicious Objects

Note: If appropriate, the BED will classify the event using the RPL EALs.

6.8.1 If a suspicious object is discovered, or the placement of such an object is observed, perform the following actions:

6.8.1.1 Do not move, open, or otherwise disturb any suspicious objects.

6.8.1.2 Notify the PNNL Security Operations Center at 375-2400 and the RPL BED using office telephones only.

6.8.1.3 Evacuate the facility. DO NOT USE THE FIRE ALARM PULL BOX TO INITIATE THE EVACUATION.

a. Warn others in the immediate vicinity.

b. Leave the building immediately via the closest exit.

c. Zone wardens are also directed to leave the building immediately without performing accountability sweeps of their zones.

6.8.1.4 Use of cellular phones, radios, or other radio frequency generating equipment within 100 feet of the RPL is prohibited.

6.8.1.5 Assemble at the staging area located at the lower south parking lot, south end of lane #9.

a. Zone wardens report to the SAS.

b. If classified materials (documents, electronic storage media, test materials, etc.) are removed from the LA or left unsecured within the LA:

- Inform the SAS that classified material has been left in an unsecured condition or has been removed from a LA.
- Call the PNNL Security Operations Center at 375-2400 and report the details surrounding the classified materials security event.
- The SAS shall provide information to the BED concerning the classified material.

c. Personnel who are wearing PPE clothing or are suspected of being contaminated shall be segregated from other building occupants and shall be surveyed by radiological control personnel. PPE will be discarded as directed by the RPT.

d. Zone wardens and all staff are to remain at the staging area and follow the instructions of the BED.

e. The Staging Area will be relocated a minimum of 300 feet away from the facility.

6.8.2 If a telephone bomb threat is received:

6.8.2.1 Use the PNNL Bomb Threat Card to record the message exactly as dictated and attempt to obtain the following information:

- When will it go off?
- Where it is located?
- What it looks like.
- What kind it is.
- Why it was placed?
- Who placed it?
- How you know so much about it?
- Who placed it?
- Where are you calling from?
- What's your name and address?

6.8.2.2 Notify the PNNL Security Operations Center at 375-2400 and provide the information given by the caller.

6.8.2.3 Upon completion of the notifications to the PNNL Security Operations Center, also notify the BED and provide the information obtained from the caller.

6.8.3 If a written bomb threat is received,

6.8.3.1 Notify the PNNL Security Operations Center at 375-2400.

6.8.3.2 Provide the written bomb threat to the RPL BED who will forward it to the PNNL Subject Matter Expert/Safeguards and Security Management Official.

6.9 Active Shooter in the building

6.9.1 When condition is observed,

6.9.1.1 RUN-Immediately try to get out of the facility to a safe location out of immediate sight of the building and call 375-2400.

6.9.1.2 HIDE-If evacuation is not possible or safe, take cover in an office with the door closed and lights off. Lock the door if possible and call 375-2400.

6.9.1.3 FIGHT-If the active shooter has confronted you and evacuation or taking cover is not possible, staff should take whatever actions are necessary to get to safety, this may include negotiating, fighting the intruder, or other. This is a last resort step.

6.9.1.4 Building Emergency Director Response

6.9.1.5 Make a PA announcement if possible depending on the situation.

6.9.1.6 Request the safeguards and security representative be notified.

6.9.1.7 Do not move any suspicious objects.

6.9.1.8 Post warnings, if applicable.

6.9.1.9 Provide emergency responders with appropriate information upon arrival.

6.9.1.10 Keep staff from entering the affected area.

6.9.1.11 If appropriate, classify the event using the RPL EALs.

6.9.1.12 Activate the MSG.

6.9.1.13 Request medical assistance if necessary.

6.10 Notice of a PNNL Lockdown

6.10.1 When condition is observed,

6.10.1.1 Staff will be notified of a PNNL Lockdown over the telephone through the CNS system.

6.10.1.2 Immediately get behind a closed door if possible.

6.10.1.3 Place projects into safe shutdown mode

6.10.1.4 Do not allow anyone into the facility.

6.10.1.5 Await further instructions via CNS

6.11 Declared Emergency in the 300 Area

6.11.1 Personnel will evacuate the facility or take cover as directed by the BED.

6.11.2 If the declared emergency originates in the RPL facility, the BED shall take actions that are in accordance with the BEP and inform and direct other 300 Area contractors and other facility owners of the emergency declaration in accordance with their emergency procedures.

7.0 Facility Take Cover - Shutdown of HVAC

7.1.1 If outside of the RPL, perform the following:

7.1.1.1 Take cover inside the nearest building.

7.1.1.2 If the building you take cover in is not the RPL, attempt to contact your line manager or team lead and have them report your whereabouts to the RPL SAS.

7.1.1.3 If unable to contact your management, report to the building emergency response organization (BERO) for the building where you are located so your personal accountability may be made.

7.1.1.4 Follow directions provided by that building's emergency organization or BED.

7.1.2 If you take cover inside the RPL, remain inside the RPL.

7.1.2.1 Assemble in the lunchroom.

7.1.2.2 Staff should refrain from eating and drinking during a take cover event if physically able, until an appropriate evaluation of the event can be made.

7.1.2.3 The BED will direct the shutdown of the RPL H&V as needed per SOP-325-003, *325 Building Heating, Ventilation and Air Conditioning Emergency Shutdown.*

7.1.2.4 If classified materials (documents, electronic storage media, test materials, etc.) are removed from the LA, or left unsecured within the LA:

- Inform the SAS that classified material has been left in an unsecured condition, has been removed from the LA, and the status/location of the classified material.
- Call the PNNL Security Operations Center at 375-2400 and report the details surrounding the classified materials as a security event, and provide details as necessary.
- The SAS shall provide information to the BED concerning the classified material.

7.1.2.5 Personnel who are wearing PPE clothing or are suspected of being contaminated shall be segregated from other building occupants and shall be surveyed by radiological control personnel. PPE will be discarded as directed by the RPT.

7.1.2.6 Zone wardens for zones two and eight are requested to activate the flashing red warning lights.

7.1.2.7 Zone wardens and all staff are to remain in the lunchroom and follow the instructions of the BED.

8.0 Utility Disconnects

Utility disconnects may be necessary under extreme emergency conditions. The RPL BED will determine if utility disconnects need to be disconnected/shut. Locations of the utility disconnects or valves are described as follows:

8.1 Electrical

The RPL Building main electrical control center switchgear is located on the second floor (northwest corner) in room 904. Extreme caution shall be used if disconnecting this power.

8.2 Potable/Process Water

The internal valves are located in the southwest corner of room 22 in the basement. The external ground valve, SCW-1-VLV (blue cover, operating handle located in RPL Shop) is located outside at the southwest corner of the RPL building.

8.3 Gas Supplies

The P-10 gas distribution system is located at the northeast end of the north gas cylinder dock. Turn cylinders off as directed by the RPL BED.

8.4 Steam

The high-pressure steam supply valves are located above the power operator's workstation entry door on the second floor east equipment room. Steam to the RPL may also be isolated using valves inside the Johnson Controls operated 325B boiler house, if access to the RPL is not possible.

8.5 Air

The external high-pressure compressed air supply may be isolated in one of two locations; CA-18-VLV in the basement adjacent to the main air receiver tank or CA-90-VLV outside at the north bottle dock adjacent to the Fire Riser 1 connection. Compressed air from the main air compressor may be isolated in one of two locations; CA-186-VLV on the second floor in the discharge piping at the main air compressor or CA-16-VLV in the basement adjacent to the main air receiver tank.

To remove all sources (except gas cylinders) of high and low pressure compressed air in the RPL and the RPL Filter Building, compressed air from the standby compressor (CA-97-COMP) located in the northwest corner of the basement must also be isolated or the standby compressor shutdown. Isolation of compressed air from the standby compressor is accomplished by shutting valve CA-96-VLV, which is located just north of the air compressor. The compressor may be shutdown using its control switch located on the compressor or by turning off electrical power to the compressor by opening disconnect switch "S-DIS-073" or breaker in SMCC-B-B2, cubicle 2D which is located in the northwest corner of the basement.

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8.6 Ventilation

Facility exhaust and supply fan controls are located:

- At the power operator workstation (room 900).
- The Power Operators METASYS work station in any PNNL facility may be used to secure the RPL main supply and exhaust fans as well as a majority of the building H&V.
- In the north part of the basement, west of the elevator.
- Additional exhaust fan controls are on the starter enclosure for each exhaust fan inside the RPL Filter Building.

External shutdown of the main exhaust and supply fans may be accomplished under extreme circumstances by removing both normal and standby electrical power from the building. A more controlled external shutdown of the main exhaust and supply fans is a complicated evolution involving multiple operating locations that must be accomplished in a specific sequence under supervision of RPL knowledgeable staff to prevent the risk of loss of building containment due to creation of a positive pressure inside the building.

8.7 Fire Protection Supply Water

Fire Suppression Supply Water Post Indicator Valves (Red PIVs) for Risers 1 through 5 are located outside the RPL building in the following locations:

- Riser #1 PIV is located at the northwest corner of the RPL building.
- Riser #2 PIV is located north of the RPL.
- Riser #3 PIV is located at the southwest corner of the RPL building.
- Riser #4 PIV is located southeast of the RPL-A annex.
- Riser #5 PIV is located southeast of the RPL-A annex.

8.8 Dry Pipe OS&Y (Riser #6)

The OS&Y valve for the dry pipe fire suppression system on the north gas cylinder dock is located on the second floor in the east equipment room at the north wall. Suppression water for this system is supplied from Riser #2 and may be isolated external to the RPL by shutting the PIV for Riser #2.

8.9 RPL Ramp Sump Pump

Water runoff down the RPL basement truck ramp at the southwest corner of the building is collected in a sump at the bottom of the ramp. The associated sump pump empties the sump as needed to prevent it from overflowing into the RPL basement through the roll-up door. The sump pump discharges to the street in front of the RPL.

Potentially contaminated fire suppression water runoff from inside the RPL basement could also enter this sump and be pumped to the street in front of the building resulting in an unacceptable spread of contamination.

The local disconnect for the sump pump is located inside the south roll-up door on the east side of the door.

8.10 RPL Decontamination Shower/Sink

A decontamination shower and sink is located in Room 426 with a tempered water supply for use as emergency decontamination system. The contaminated water is routed to two 250 gallons storage tanks located in Room 94B.

The system is designed with the drains directed to one of the two tanks. A high level alarm activates locally when the selected tank reaches 66 %. The high level alarm is used to prevent overfilling of the tank. The water supply is manually isolated to allow valve alignment to the second tank for water receipt. The high high alarm at 75 percent of the tank volume will automatically isolate water to the shower or sink. The tanks have a common overflow for upset conditions (.i.e. automatic water isolation fails, improper valve alignment).

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9.0 Termination, Incident Recovery, and Restart

9.1 Termination

The Incident Commander, in consultation with the BED will recommend termination of the event when conditions indicate that it is safe to do so. The Event Closeout Form should be completed before any recommendation is made to terminate a declared emergency.

9.2 Recovery

Depending on the circumstances of the event, a recovery team consisting of the Incident Commander, RPL BED, and appropriate SMEs will develop and recommend a recovery plan for restoring the facility to operable status. Emphasis will be placed on the careful cleanup of released material and contaminated debris to minimize further risk to personnel, the public, or the environment while preserving evidence at the event scene. All waste materials generated by the cleanup will be containerized in drums or other appropriate containers and stored in an approved storage area pending characterization and determination of the final treatment/disposal requirements. The recovery plan will be reviewed and approved and meet the requirements of the PNNL-MA-110, *Emergency Management Plan,* Termination and Recovery.

The BED is responsible for assuring that emergency equipment is clean and fit for its intended use prior to resumption of operations. Equipment used during an incident will be decontaminated (if practicable) or disposed of as spill debris. Decontaminated equipment will be checked for proper operation prior to storage for subsequent use. Consumables and disposed materials will be restocked. Fire extinguishers will be recharged or replaced.

For emergency events involving the TSD or a 90-day accumulation area, the recovery plan will include the appropriate notification of the Washington State Department of Ecology and appropriate local authorities of recovery actions taken prior to restart. The operator of the TSD will also provide a written report to the Department of Ecology within 15 days after the incident or within 30 days after the incident for a release from a tank system to the environment that does not result in an activation of the contingency plan[23].

9.2.1 Emergency Decontamination Facilities

The RPL facility has decontamination capability as discussed in section 8.10. Radiological control personnel are the only staff that may perform personnel decontamination.

If an evacuation of the RPL facility occurs and re-entry is not possible to decontaminate affected personnel, radiological control supervision may use the 3410 building personnel decontamination facility located in room 1601. In the event that the affected personnel are injured, they should be transported directly to Kadlec Medical Center. If large group decontamination facilities are requested, request assistance from the Hanford Fire Department Mobile Decontamination Facility.

[23] Section 9.2, first three paragraphs: Permit requirement, Class 1 Modification 6/30/15.

9.2.2 Emergency Radiological Exposure Guidelines

In extremely rare cases, emergency exposure to radiation may be required to rescue personnel or protect major property. Emergency exposure may be authorized in accordance with the provisions contained in 10 CFR 835. The dose limits for personnel performing these operations are listed in Table 9.1.

Note: Only RadWorker 2 trained staff are allowed to volunteer for receiving emergency radiological exposures.

The lens of the eye dose limit should be three times the listed values. The shallow dose limit to the skin of the whole body and the extremities is ten times the listed values.

Table 9.1. *Emergency Dose Limits*

Dose Limit (Total Effective Dose Equivalent)	**Activity Performed**	**Conditions**
5 rem	All	N/A
10 rem	Protecting major property	Only on a voluntary basis where lower dose limit not practicable
25 rem	Lifesaving or protection of large populations	Only on a voluntary basis where lower dose limit not practicable
> 25 rem	Lifesaving or protection of large populations	Only on a voluntary basis to personnel fully aware of the risk involved

9.3 Restart

In most cases the Event Closeout Form will be sufficient for supporting recovery from an event and actions needed for resumption of normal operations. For complex events with significant facility damage or need for incident staffing for more than 48 hours a recovery plan and process will be required. Restart of the facility following complex emergencies will be conducted with a recovery plan led by a Recovery Director. The recovery plan will be developed with support from the RPL Facility Manager and RPL Building Manager.

The following documents should be consulted, used as reference, and implemented if needed: ADM-EPIP-3.0, *Recovery Plan*, ADM-EPIP-3.0 *Recovery Plan, PNNL Guides for Post-Natural Phenomena Hazard Building Inspection*, and RPL-PLN-701, *RPL Business Continuity Plan.*

For severe damage to the facility due to natural phenomena (extreme weather conditions, seismic events, wildfires, external flooding) or other causes (severe fire, physical attack, explosions, events in neighboring facilities), the recovery plan shall describe the process for a systems engineering assessment and evaluation of facility safety significant, environmental protection, mission critical and other essential systems. The purpose of these assessments is to define actions needed to place the facility into a safe configuration pending any resumption of operations.

Recovery for events that involve a container storage area within the HWTU, require the container storage and containment system to be evaluated before restart.

If the event involved a tank system leak, repairs must be certified by an independent, qualified, registered professional engineer.

Before operations are resumed in the facility, all emergency equipment used during the emergency shall be cleaned and restored to usable, operable condition[24].

[24] Section 9.3, last three paragraphs: Permit requirement, Class 1 Modification 6/30/15.

10.0 Emergency Equipment [25]

Support equipment available to assist in responding to an emergency can be found by referring to DOE/RL 94-02, Section 11.2 and the Hanford Fire Department emergency equipment listing in Appendix C of 94-02.

10.1 Portable Emergency Equipment

None

10.2 Fire Control Equipment

- Portable Class ABC Fire Extinguishers are located throughout the facility. Each Class ABC extinguisher is capable of suppressing fires involving ordinary combustible materials, flammable liquids, oils, paints, flammable gases, and fires involving electrical equipment. Class D extinguishers will be located in areas vulnerable to Class D fires if reactive metals are stored there (e.g., dangerous waste storage room). Manual dry chemical fire extinguishers are installed in the SAL hot cells and are available outside the HLRF A and B hot cells. The fire extinguisher locations are identified on the floor plans (Attachments 1-3).
- Portable Class ABC Fire Extinguishers with piercing tips are located in each lab that contains a glovebox. These extinguishers are for the HFD use only. RPL staff have not been trained in their use. The piercing tipped fire extinguisher locations are identified on the floor plans (Attachments 1-3).
- RPL is equipped with an automatic fire detection, alarm, and suppression system. Five wet pipe and one dry pipe sprinkler system provide automatic fire suppression.
- A Mobile Command Post Vehicle can be obtained from the Hanford Fire Department (HFD) at 373-2230. The HFD Battalion Commander will approve and dispatch the vehicle.

10.3 Communications Equipment/Warning Systems

- Fire alarm pull boxes are located throughout the facility. The primary locations are at all exits of the facility. All locations are shown on the floor plans (Attachments 1-3).
- Hanford Site Telephone Notification System (TNS) is a component of the Hanford Emergency Notification System and designed to use the existing telephone system to notify individual employees. When the phone is answered, a recorded message will provide event information and inform staff of actions they are expected to take.
- PNNL Communicator Notification System (CNS) is a system that will allow emergency messages to be communicated quickly to all staff via the PNNL phone system. Phones at PNNL in offices, conference rooms, and common areas such as lobbies, conference rooms, and lunchrooms are connected to the system. When the phone is answered a recorded message will provide event information and inform staff of actions they are expected to take. This can be activated by having the BED call 375-2400.

[25] Section 10: Permit requirement, Class 1 Modification 6/30/15.

- A criticality alarm system (CAS) is present in the building. The system is equipped with neutron sensitive criticality detectors. The CAS alarms in locations where the expected dose from an accidental criticality may exceed 12-rads in free air. The system is tested and maintained in accordance with preventive maintenance procedures.

  Note: These systems are not considered emergency equipment and may not be available during all types of emergencies.

- Other non-emergency communications equipment installed in RPL include:
  - Public address system. (#8 on any RPL phone)
  - Public address system in the fire alarm control panel.
  - Commercial telephone system that may also be used to summon assistance during an emergency.
  - Hand held radios provided by the BED.

10.4 Personal Protective Equipment (PPE)

Safety showers and eyewash units are installed at several locations throughout the facility including waste storage areas. All locations are shown on the floor plans (Attachments 1-3).

Personnel protective clothing and respiratory equipment is available in the facility for use during both routine and emergency operations. This equipment includes:

- Chemically resistant suits, aprons, boots, and gloves.
- Protective glasses.
- Chemical goggles.
- Face shields.
- Full-face respirators with extra cartridges.
- Radiological clothing.

Kits containing a variety of radiation monitoring instruments, forms, and equipment are available for use in an emergency. PNNL maintains these kits, which contain protective apparel, instruments, and equipment for personnel decontamination and other immediate emergency needs. These supplies and equipment are only adequate to fulfill immediate needs during the initial stages of an emergency.

10.5 Spill Control and Containment Supplies

Spill kits are located throughout the facility and are maintained by the CSMs. Additional spill kit materials can be obtained in room 527. The following emergency equipment is maintained in (or adjacent to) each of the 90-day hazardous waste accumulation areas. The amount of material maintained varies depending on the amount of waste being accumulated at the individual 90-day area.

- Commercially available granular absorbent (e.g. diatomaceous earth)
- Absorbent pads
- Commercially available acid neutralizer[1] (e.g. granular sodium bicarbonate)

- Commercially available caustic neutralizer[2] (e.g. dilute boric acid solution)
- Personal Protective Equipment
  - Safety glasses with side shields
  - Lab coat
  - Leather gloves
  - Chemical resistant gloves (e.g. nitrile)

[1] Required in accumulation areas containing liquid acidic wastes.
[2] Required in accumulation areas containing liquid caustic wastes.

11.0 Evacuation of Persons and Visitors

1. RPL occupants shall be aware of visitors that may require evacuation. Alternate housing for staff that are sensitive to excessive hot or cold conditions (temperately disabled) may be required due to emergency response actions.

Note: Alternate Staging Area – in the event of an extended building evacuation during inclement weather, the 350 building, or other indoor locations deemed safe may be used for housing staff at the discretion of the BED[26].

2. Facility and research management provides safety and emergency preparedness briefings for large visitor groups or tours. Individual visitors are briefed by their host.
3. In all cases, the safety of building visitors is the responsibility of the host, who shall assure that visitors are provided a safe and orderly evacuation. The host shall report the visitor status to the appropriate zone warden as soon as is practical, after the evacuation.

[26] Section 11, Note: Permit requirement: Section 11.0 Note, Class 1 Modification 6/30/15.

12.0 Emergency Action Levels

12.1 300 Area Protective Actions

300 Area Onsite Protective Actions		
Classification	**Action**	**Implemented By**
Alert	• Evacuate or shelter affected facility personnel.	Facility
	• Shelter[1] 300 Area and adjacent 600 Area. • Initially restrict access at: - Route 4S at Milepost 19; - George Washington Way Extension (to 300 Area) intersection with George Washington Way; and - George Washington Way intersection with Stevens Drive. (Roadblocks can be relocated based upon consequence assessment upon approval by the IC/SED.)	POC (Quick Reaction Checklist)/ EOC Shift Office
Site Area/ General Emergency	• Evacuate or shelter affected facility personnel.	Facility
	• Shelter[1] 300 Area, HAMMER, Patrol Training Academy, Cold Test Facility, and adjacent 600 Areas. • Restrict access at: - Route 4S at Milepost 19; - George Washington Way Extension (to 300 Area) intersection with George Washington Way; and - Horn Rapids intersection with Stevens Drive.	POC (Quick Reaction Checklist)/ EOC Shift Office
	• Plan for subsequent 300 Area evacuation as required.	Hanford EOC
[1]Automatic sheltering for entire areas will not be implemented during a seismic event. If a seismic event occurs, facility management will implement protective actions appropriate for their facility conditions. After a seismic event, site protective actions based upon incident assessment will be identified, planned, and communicated from Incident/Area Command and/or the Hanford EOC.		

Continued on next page...

300 Area Offsite Protective Actions and Recommendations		
Classification	**Action**	**Implemented By**
Alert	• None	N/A
Site Area Emergency	• Implement evacuation of Columbia River from White Bluffs Ferry Landing to Leslie Groves Park.	Counties (RLEP 3.3)
General Emergency	• Implement evacuation of Columbia River from White Bluffs Ferry Landing to Leslie Groves Park.	Counties (RLEP 3.3)
	• Evacuate 2.2-mile radius.	Benton/Franklin Counties

12.2 RPL Emergency Action Levels

The Emergency Action Level (EAL) Tables are published in DOE-0223, *Emergency Plan Implementation Procedure for RPL* and can be obtained from the RPL Building Manager.

13.0 Attachments

Attachment 1 – Emergency Equipment & Evacuation Routes - 1st Floor

Attachment 2 – Emergency Equipment & Evacuation Routes – 2nd & 3rd Floors

Attachment 3 – Emergency Equipment & Evacuation Routes – Mezzanine & Basement

Attachment 4 – Zone Warden Areas – 1st Floor

Attachment 5 – Zone Warden Areas – 2nd & 3rd Floors

Attachment 6 – Zone Warden Areas – Mezzanine & Basement

Attachment 7 – Staging Area Map

Attachment 8 – Alternate Staging Area Map

Attachment 9 – Location of RPL in the 300 Area

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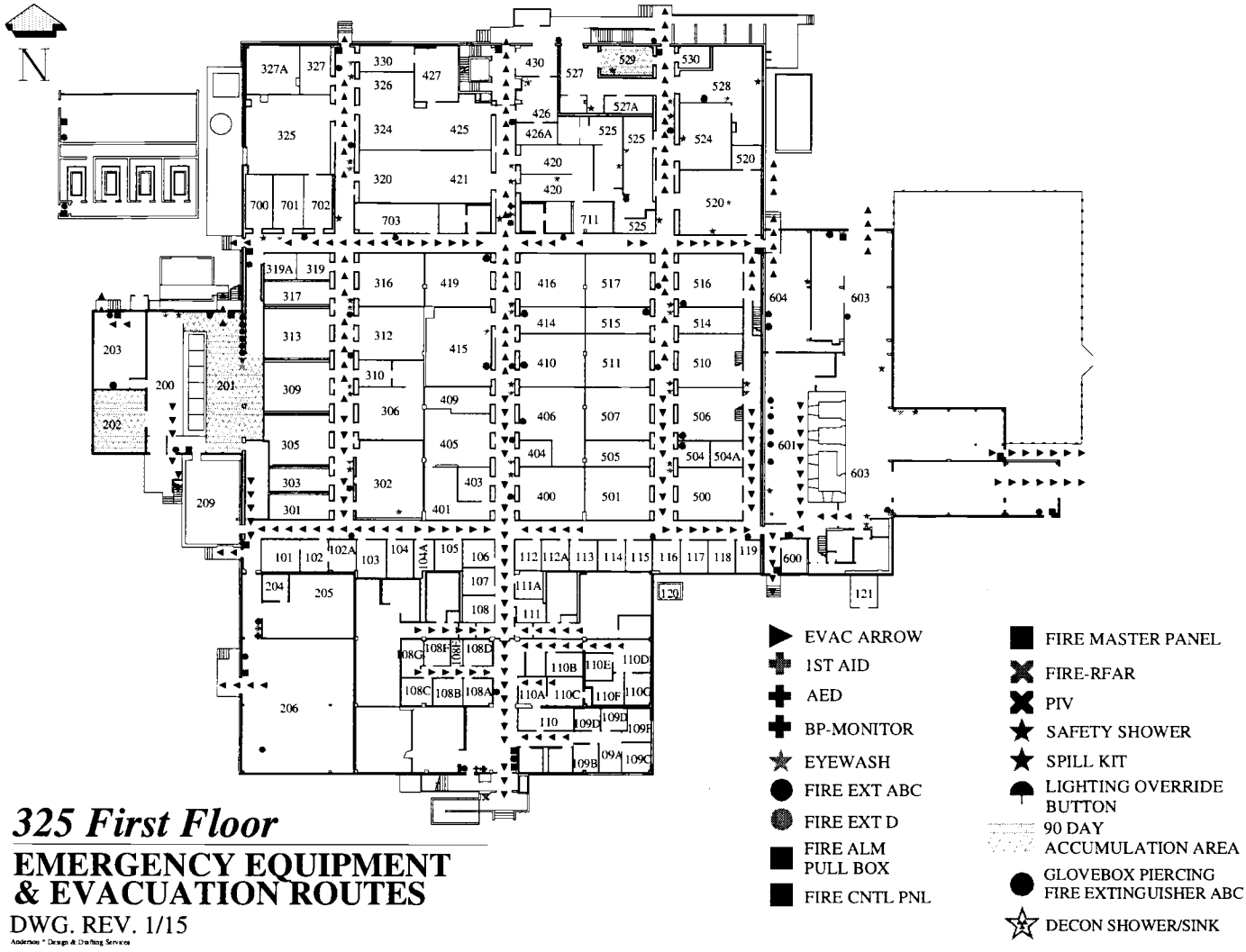
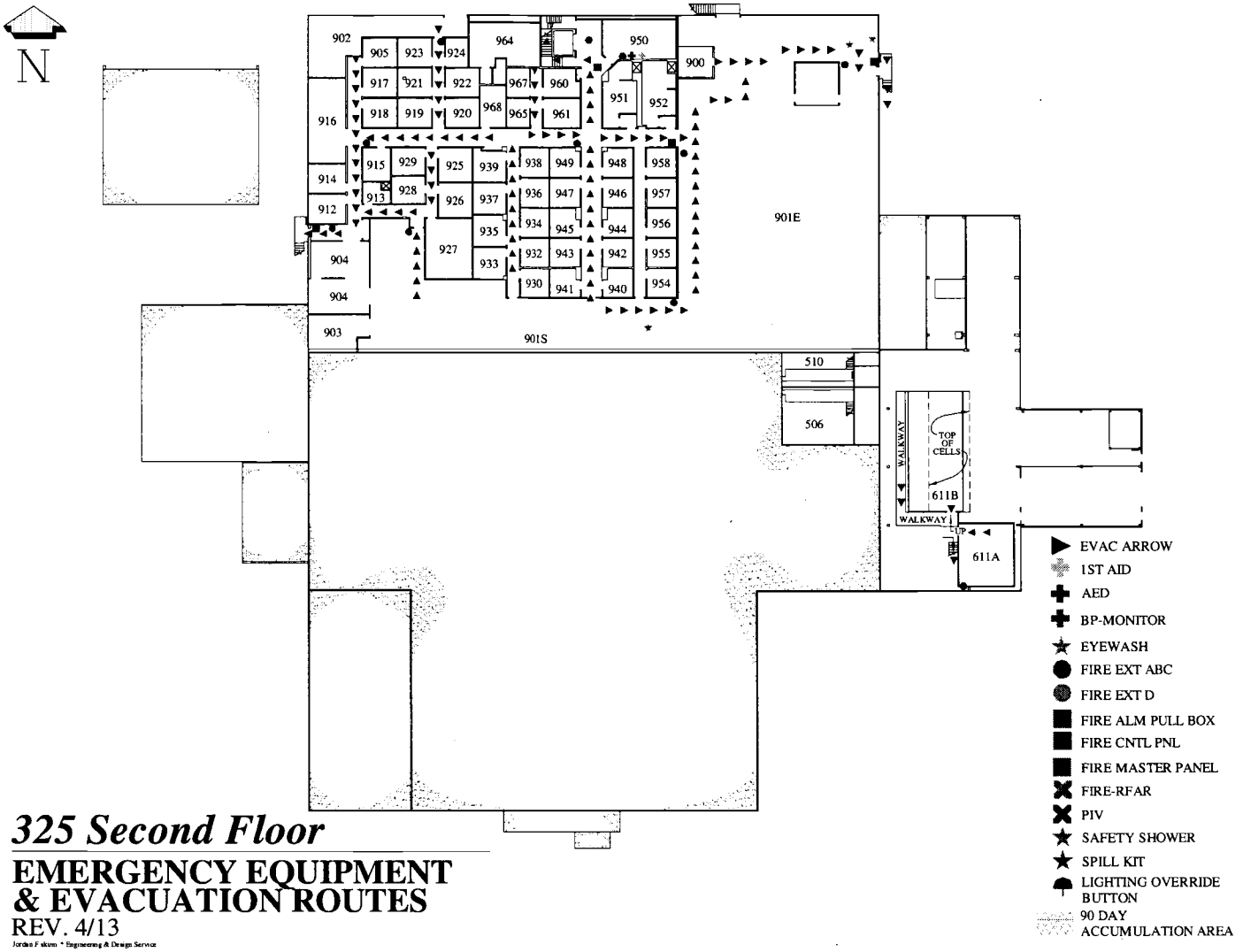
Attachment 1 – Emergency Equipment & Evacuation Routes - 1st Floor[27]



[27] Section 13.0, Attachment 1: Permit requirement, Class 1 Modification 6/30/15.

Attachment 2 – Emergency Equipment & Evacuation Routes - 2nd & 3rd Floors[28]



325 Second Floor

EMERGENCY EQUIPMENT & EVACUATION ROUTES

REV. 4/13

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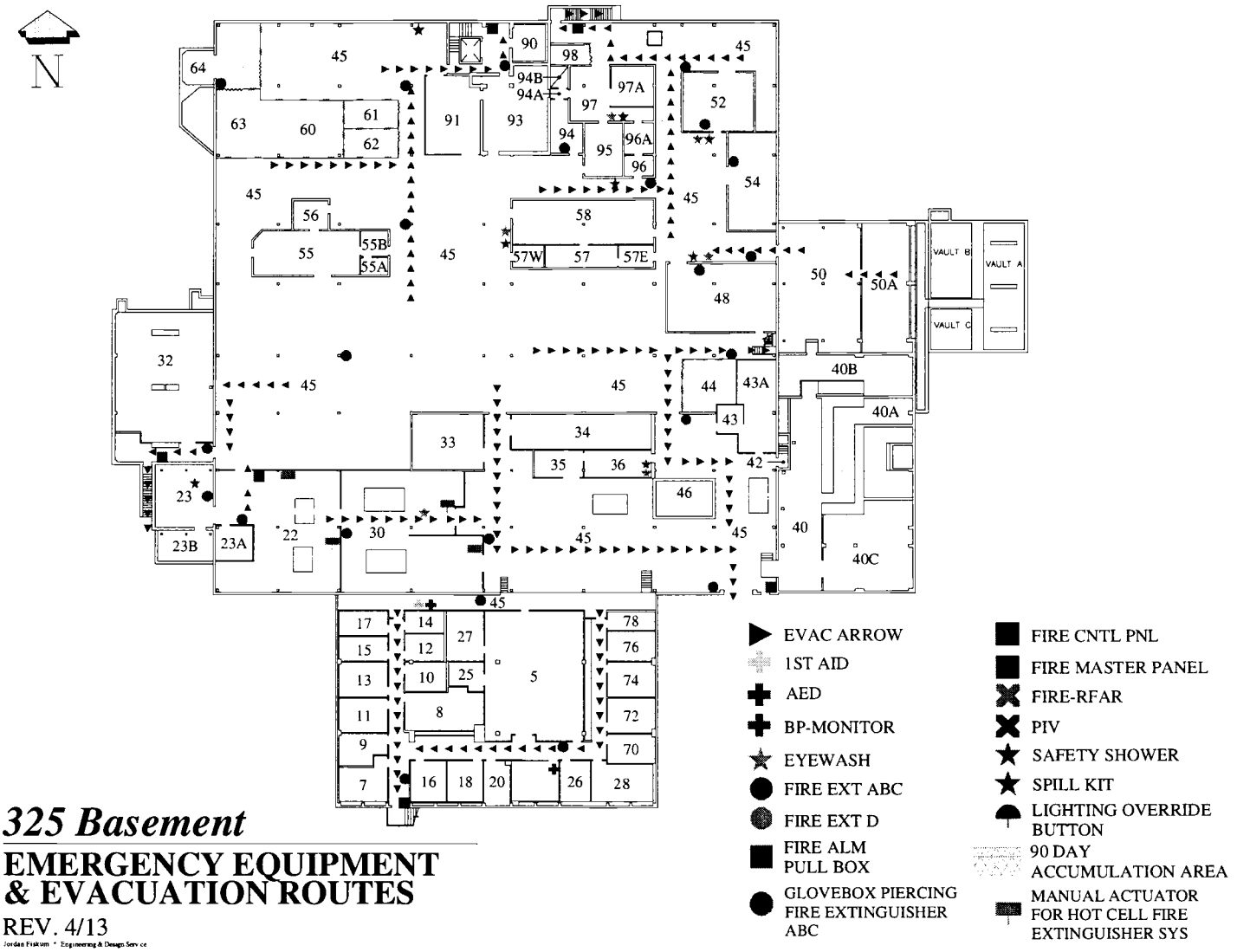
[28] Section 13.0, Attachment 2: Permit requirement, Class 1 Modification 6/30/15.

Attachment 3 – Emergency Equipment & Evacuation Routes - Mezzanine & Basement[29]



325 Basement

EMERGENCY EQUIPMENT & EVACUATION ROUTES

REV. 4/13

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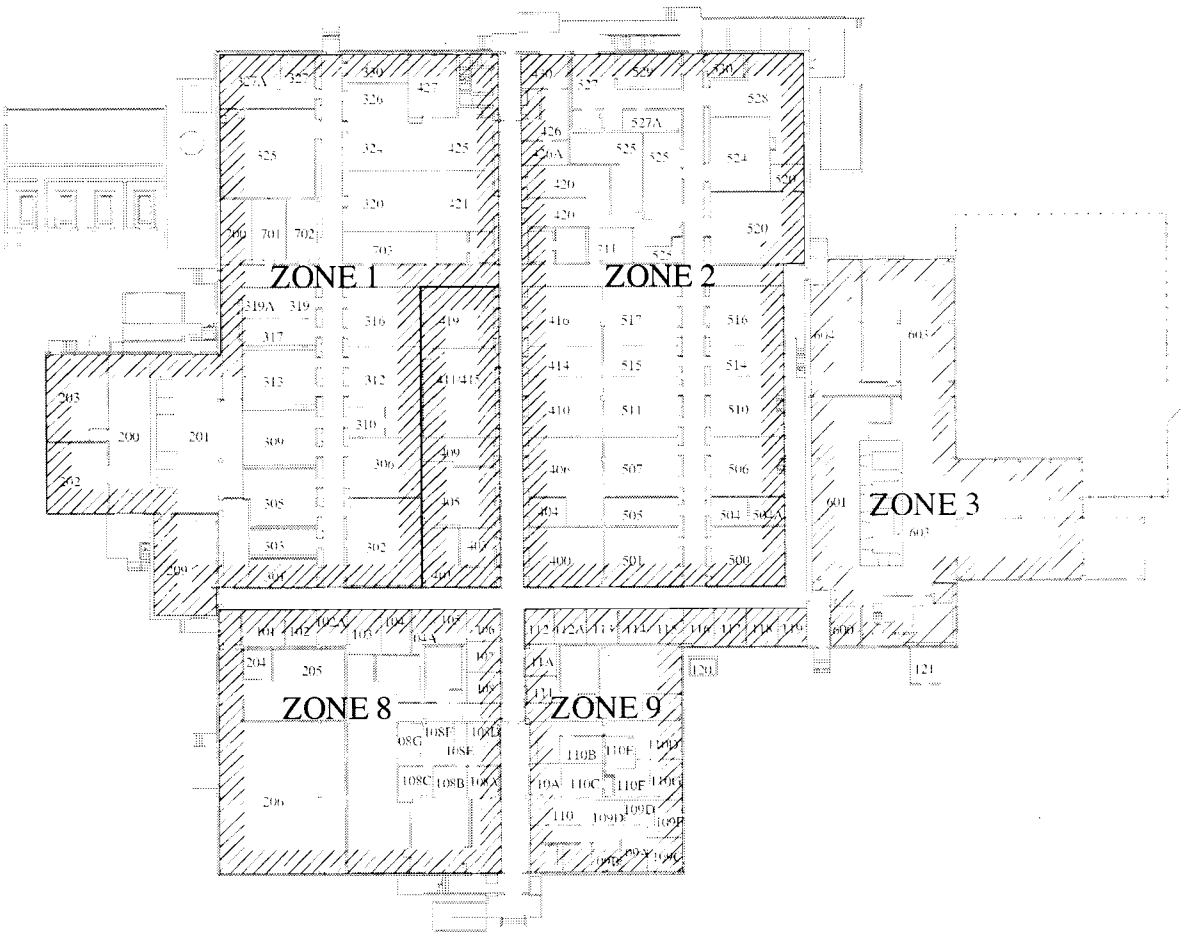
[29] Section 13.0, Attachment 3: Permit requirement, Class 1 Modification 6/30/15.

Attachment 4 – Zone Warden Areas – 1st Floor

N



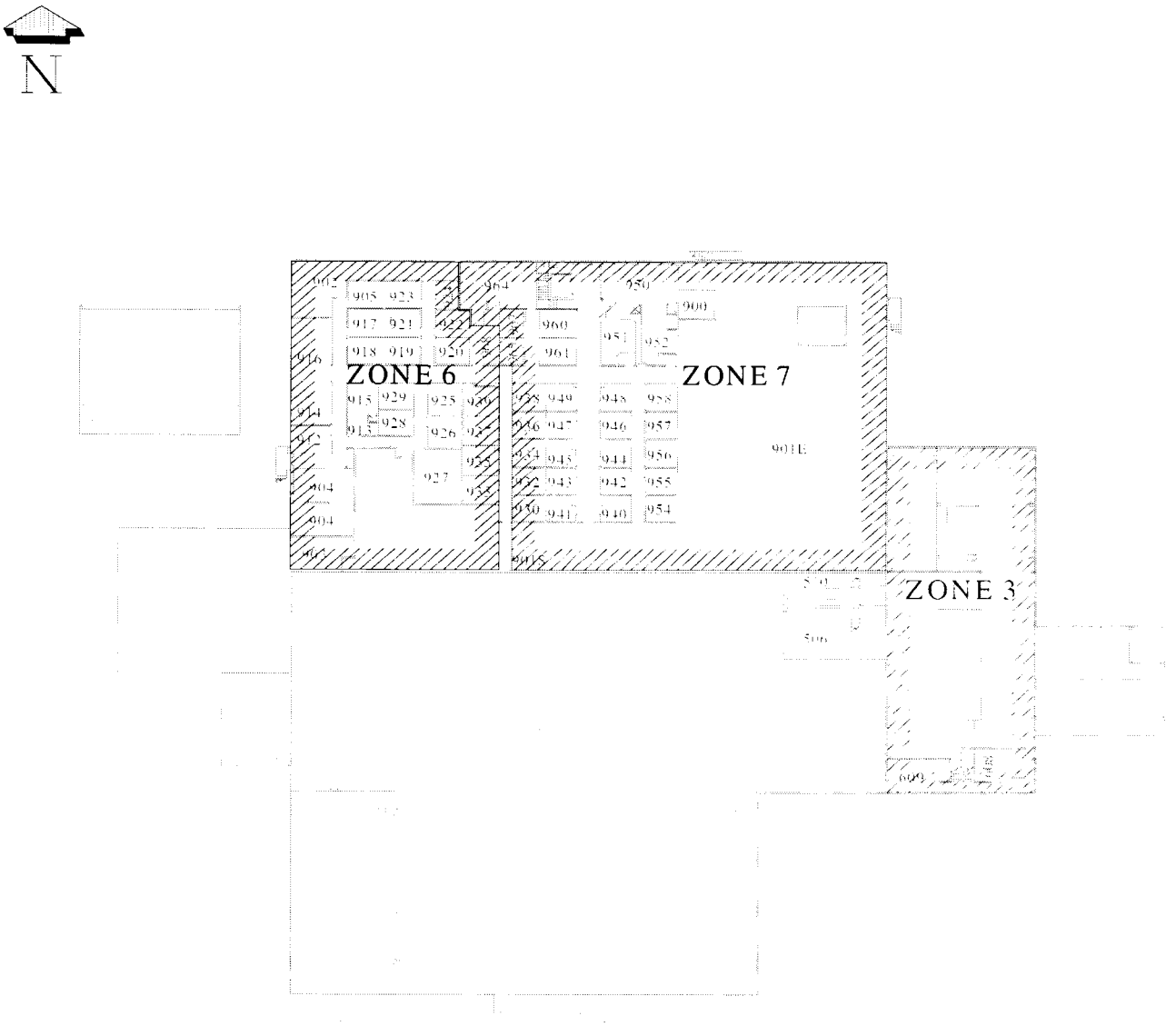
325 First Floor

ZONE WARDEN MAP

REV. 3/14

Jordan Hall • Engineering & Design Server

Attachment 5 – Zone Warden Areas – 2nd & 3rd Floors



325 Second Floor

ZONE WARDEN MAP

REV. 3/14

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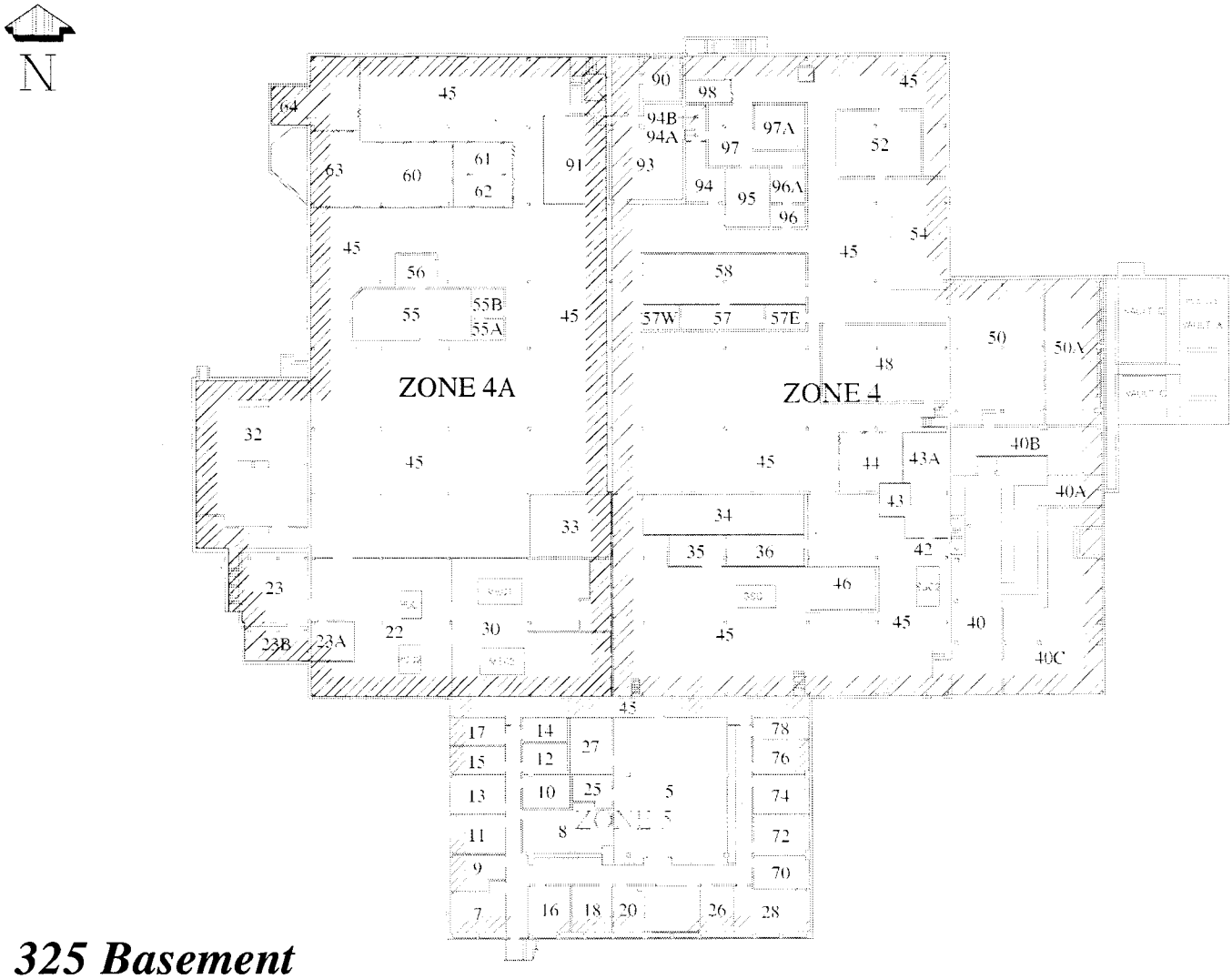
Attachment 6 – Zone Warden Areas – Mezzanine & Basement



325 Basement

ZONE WARDEN MAP

REV. 3/14

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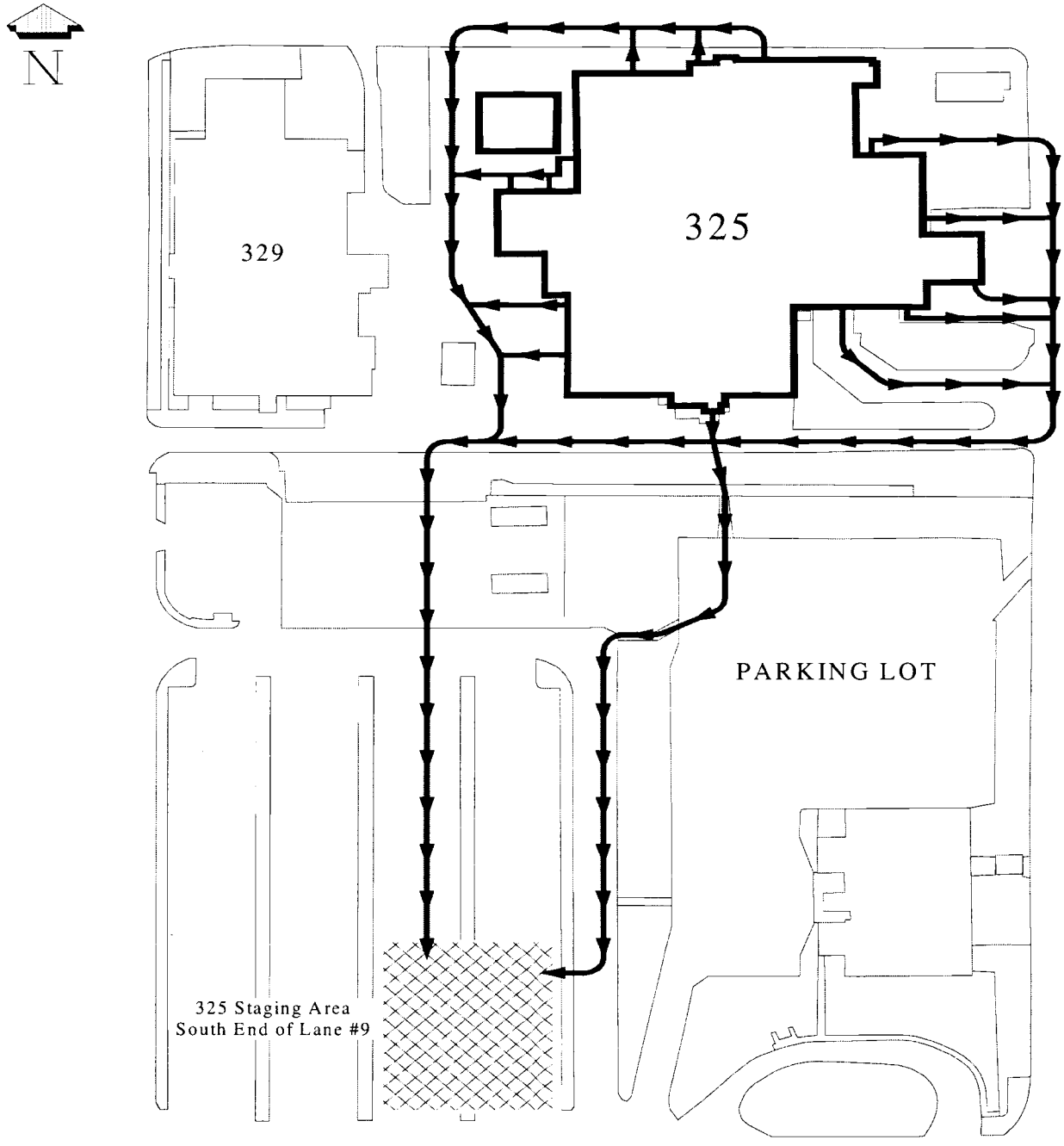
Attachment 7 – RPL Staging Area Map[30]



325 Building

EMERGENCY EVACUATION ROUTES & STAGING AREA

REV. 2/14

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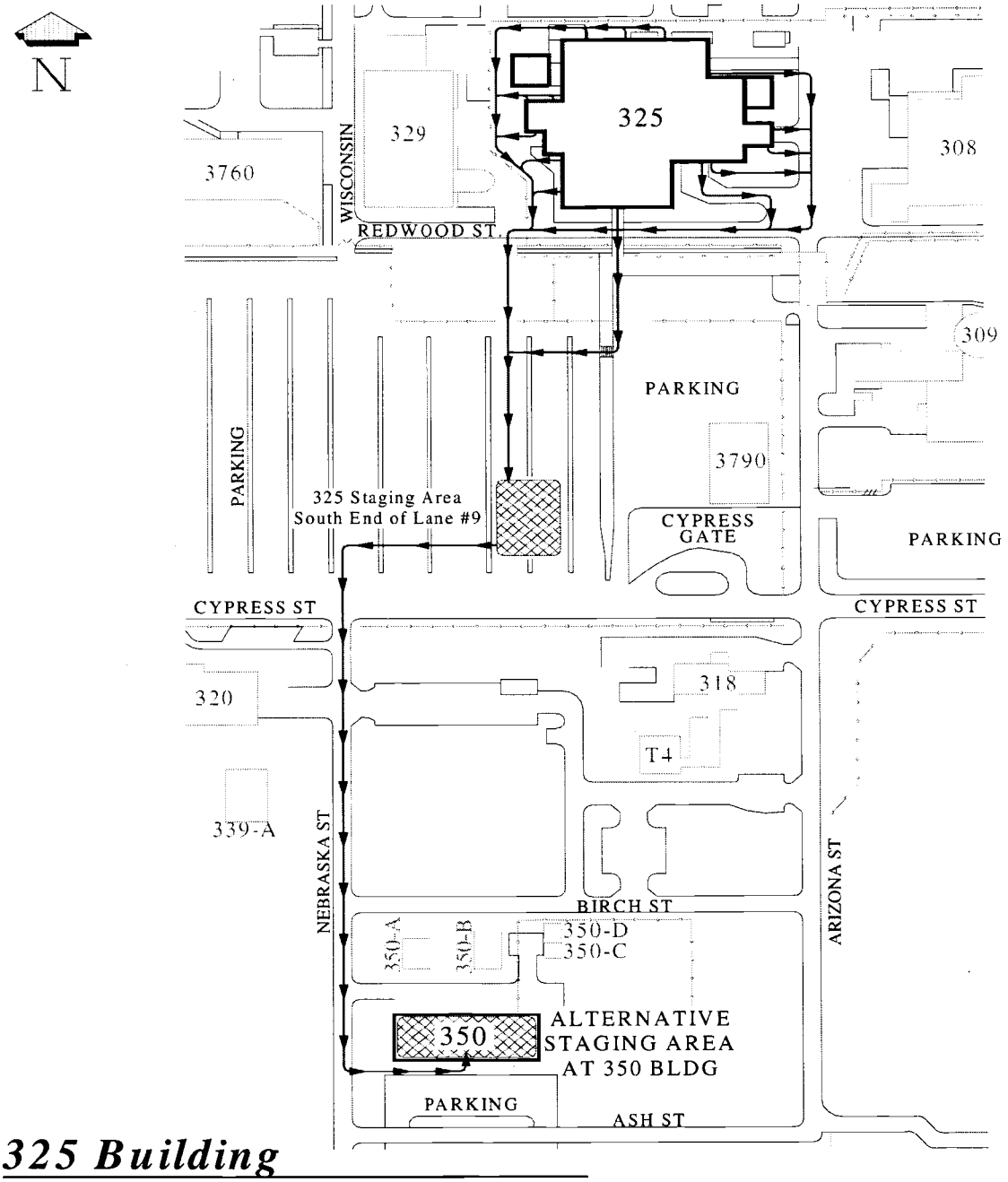
[30] Section 13.0, Attachment 7: Permit requirement, Class 1 Modification 6/30/15.

Attachment 8 – RPL Alternate Staging Area[31]



325 Building

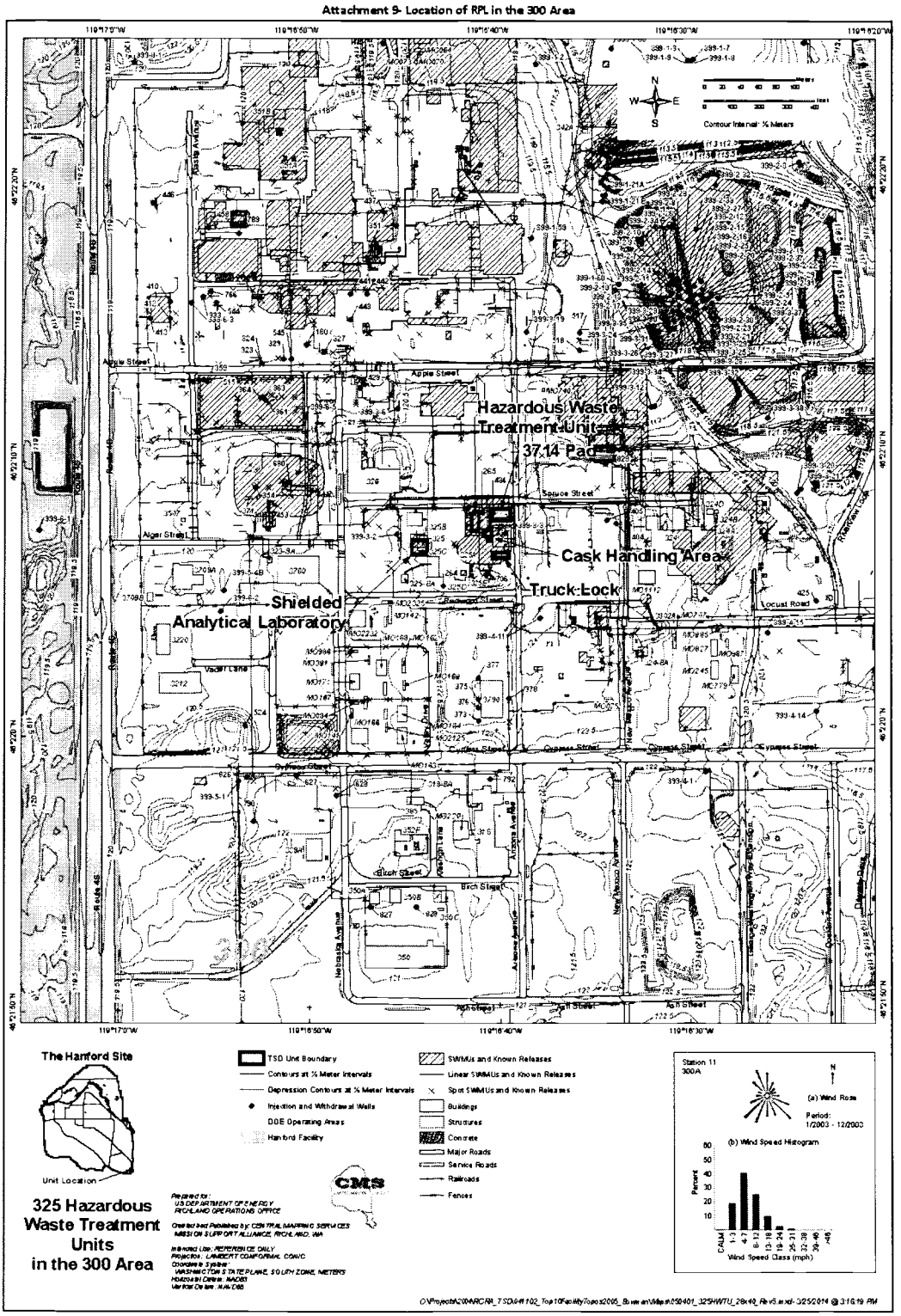
EMERGENCY EVACUATION ROUTES & ALTERNATE STAGING AREA

REV. 2/14

Jordan Piskum • Engineering & Design Service

[31] Section 13.0, Attachment 8: Permit requirement, Class 1 Modification 6/30/15.

Attachment 9 – Location of RPL in the 300 Area



14.0 References and Source Requirements

14.1 References

ADM-001, *Document Production and Distribution*

ADM-EPIP-2.0, *Management Support Group*

ADM-EPIP-3.0, *Recovery Plan*

ADM-EPIP-7.0, *PNNL Active Shooter Response Procedure*

HDI, *Basic Staff Practices*

HDI, *Responding to Normal Chemical Spills-Adverse Chemical Conditions (Exhibit)*

HDI, *Workplace Substance Abuse*

HDI, *Report and Event or Occurrence*

PNNL-DSA-325, *Radiochemical Processing Laboratory Documented Safety Analysis*

PNNL-EAL-RPL, *Emergency Action Level Tables for the RPL*

PNNL Guides for Post-Natural Phenomena Hazard Building Inspection

PNNL-MA-110, *PNNL Emergency Management Plan*

RCP-8.1.02, *Quick Sort Survey of Personnel*

RPL-PLN-701, *RPL Business Continuity Plan*

SOP-325-003, *325 Building Heating, Ventilation and Air Conditioning Emergency Shutdown*

14.2 Source Requirements

Washington Administrative Code, WAC-173-303-340, -350, -360

Washington State Patrol, RL-EP3.3

DOE-0223, *RL Emergency Implementing Procedures – Applicable to PNNL-Managed Facilities on the Hanford Site*

DOE/RL-94-02, *Hanford Emergency Response Plan – Applicable to PNNL Managed Facilities and Activities on the Hanford Site*

14.3 Emergency Preparedness Checklists

14.3a BED Hazardous Material Facilities (RPL) Checklist

14.3b Chemical Hazard Assessors Checklist

14.3c Event Closeout Form

14.3d Facility Operations Specialist (FOS) Checklist

14.3e Hazards Communicator Checklist

14.3f Incident Command Post Communicator Checklist

14.3g Incident Manager Checklist

14.3h Radiological Hazard Assessors Checklist

14.3i RPL Staging Area Supervisor Checklist

14.3j PNNL Emergency Evacuation Report Form

Procedure Revision History

Date	Rev. #	Description
4/01/03	0	• Revised and edited for annual update, including insertion of history page.
7/30/03	0	• Made the following name changes to the RPL BEP and distributed changes to all holders of controlled copies: 1. In Exhibit 12.1 on page 52 change the MSG Lead 1st and 2nd alternates to Larry Maples and Reed Sharp respectively. 2. Change the primary warden for Zone 4 to Todd Haynie, 372-3067. 3. Change the secondary warden for zone 4A to Todd Haynie, 372-3067. 4. In Table 14.a on page 59, change the 90-Day Storage Emergency Contact to Raymond D. Bell, Work Phone: 376-2321, Cell Phone: 521-4505.
9/03/03	0	Replaced Larry Page with Tracy Eaton on pages 52 and 57.
9/11/03	0	Replaced Shane Loper with Greg Varljen as Secondary Zone Warden for Zone 4 and Primary Zone Warden for Zone 4A on pages 56 and 57.
9/30/03	0	Insert Maria Olivarez as the 1st Alternate for Assisting Communicator and the ICP Recorder in Exhibit 12.1. (sma)
11/17/03	0	Change William Buyers' cellular telephone number to his current number. (sma)
11/21/03	0	Replaced Katherine Carson with Darlene Winter as Primary Zone Warden and replaced Tracy Eaton with Katherine Carson as Secondary Zone Warden for Zone 7 on page 57. (sma)
3/30/04	0	Annual BEP update (nem-m)
5/6/04	0	Update Evacuation Routes – 2nd and 3rd Floors map, correction of room numbers. (sma)
7/7/04	0	Made the following change to section 9.2.1 Emergency Decontamination Facilities: The RPL Facility Personnel Decontamination Room is located in Room 606 has only limited decontamination capability (a small sink). Radiological Control Personnel are the only staff that may perform Personnel Decontamination. The decontamination shower in this room is out of service. If an evacuation of the RPL Facility occurs and re-entry is not possible to decontaminate affected personnel, Radiological Control Supervision may use the 329 Building Personnel Decontamination Facility. In the event that affected personnel are injured, they should be transported directly to Kadlec Medical Center. If large group decontamination facilities are required, request assistance from the Hanford Fire Department Mobile Decontamination Facility. (lef)
8/11/04	0	• Replace Tracy Eaton with Jason Armstrong as ICP Hazards Communicator. • Remove Stan Jones as BED and ICP Communicator Alternates. Also on Exhibit 12.2.1. • Remove Teresa Schlotman as the Primary SAS and move the alternates up one step. • Put Andrea Kwiecinski in as Primary ICP recorder and move Bob and Maria to alternates. • Remove Abby Nicholson and Scott Nickerson as ICP Chemical Hazards Assessor alternates. • On Exhibit 12.2.4, Change "RPL Facility Project Manger" to "Nuclear Work Team Leader" and add Environmental Compliance Rep. as John Holland in the Waste Management block. • Replace Wayne Larson as TSD POC (Table 14.a) and replace with Ron Del Mar. (lef)
8/25/04	0	Fix name spelling of Andrea "Kwiecinski" as ICP Recorder (lef)
9/28/04	0	• Made the following name changes to the RPL BEP and EIPs: • Change assisting Communicator to Maria Olivarez, remove alternates • Change ICP Chemical Hazards Assessor to Kevin Sheffield. • Change ICP Communicator to Holly Black-Kania. • Change MSG Recorder (1st Alternate) to Mary Bradshaw.

Date	Rev. #	Description
		• Zone Warden changes: Zone 4A primary to Matthew Fountain; Zone 6 Secondary: Joyce McGuffey : Zone 7 Primary : Gregg Lumetta, Secondary : Clark Lindenmeier : Zone 9 Secondary ; Paul Bredt : Move the North Dock/Cylinder Storage Area from Zone 2 to Zone 7. • Staging Area Supervisor; Move Bob Schumacher to 2nd Alternate and put Debra Coffey as the 1st Alternate. • Throughout document, change PNNL SPC or PNNL Single Point Contact to PNNL Operations Center. • Change RPL Facilities Project Manager to Nuclear Work Team Leader. • Change RPL Building Ventilation & Power Operations Supervisor to Utility Operations Work Team Leader.
10/19/04	0	Remove 43, 45, 63, 517, and 601 from the list of 90-day waste accumulation sites from the second paragraph in section 3.6 on the bottom of page 16. Also change the 1st Alternate MSG Recorder to Laura Fuher. (lef)
11/01/04	0	Replace HEHF with new Hanford medical contractor AMH. Update ICP Hazards Assessor: 1-Todd Haynie, #2- Kevin Sheffield (lef)
3/21/05	1	2005 Annual Update: 1. Standardized appearance of the word AH-OO-GAH throughout the BEP. 2. Section 2. Added Acronyms section. 3. Section 3.1.1, added information on preservation of evidence to BED responsibilities. Added Testing Designated Position (TDP) requirement to BED position responsibilities. 4. Section 3.2.1, added TDP requirement to the ICP position responsibilities. 5. Section 3.2.8, added TDP requirement to the MSG Lead position responsibilities. 6. Section 3.2.5, Created new description for MSG Liaison duties. Renumbered remaining sections in chapter. 7. Section 3.2.8, added the words criticality alarms in zone warden indication of hazards. 8. Section 3.2.9, added TDP requirement to the FOS position responsibilities. 9. Section 3.3, Individual Staff Responsibilities, added information regarding discarding PPE on building evacuations and PCM use for fire/criticality. 10. Sections 5.5 Criticality, added editorial comment. 11. Section 6.1.1, item 3, added "If the RPL has a loss of electrical power and Standby Power is still available, assemble in the Lunch Room. Personnel exiting Radiological Buffer Areas do so without surveying through the PCMs. If personnel are wearing Personal Protective Equipment (PPE) clothing, are suspected of being contaminated, or have exited a Radiological Buffer Area, isolate them from other building occupants and request they be surveyed by Radiological Control Personnel. a. Refer to Section 6.1.11 for Reduced Ventilation Flows. 12. Section 6.1.10, Criticality, removed the last sentence from item 3, bullet 1. 13. Section 6.1.10 new item 3: Personnel exiting Radiological Buffer Areas do so without surveying through the PCMs. If personnel are wearing Personal Protective Equipment (PPE) clothing, are suspected of being contaminated, or have exited a Radiological Buffer Area, isolate them from other building occupants and request they be surveyed by Radiological Control Personnel. 14. Section 6.3 Natural Phenomena, to each event added the words "If evacuating the facility, have 375-2400 report the evacuation to the ONC (376-2900)." 15. Section 8. Utility Disconnects: Added information on the Ramp Sump Pump local disconnect location. 16. Exhibit 12.1, Updated BERO members. Added new position of MSG Liaison 17. Section 12.2.1, Updated BED name (David Clark) and phone numbers. Added Bill Buyers contact info as 2nd alternate BED. Added and * to TDP positions with the note to coordinate changes in these positions with the TDP Administrator. 18. Section 12.2.4, Added MSG Contact name and phone number to the emergency contact list.

Date	Rev. #	Description
		19. Exhibit 12.4, BED Checklist – a. Step 1, added requests for Hanford Fire department and Hanford Patrol for certain events. RLEP 1.1, Checklist 3.1 consistency. b. Step 2, added additional equipment to note regarding building evacuation due to bomb threats. RLEP 1.1, Checklist 3.1 consistency. c. Step 2, added new bullet regarding actions for evacuation while under a take cover. RLEP 1.1, Checklist 3.1 consistency. d. Step 6, added info regarding transportation events and event classification. Also added box with RCRA criteria. RLEP 1.1, Checklist 3.1 consistency. e. Step 8, minor wording change. RLEP 1.1, Checklist 3.1 consistency. f. Step 12 (new) regarding preservation of evidence at event scene. RLEP 1.1, Checklist 3.1 and MA-110, Exhibit A.16 consistency. g. Renumbered all steps after 12. 20. Exhibit 12.5, ICP Communicator Checklist- a. Inserted new step 5, related to actions required if event does NOT reach EAL criteria. PNNL-MA-110, Exhibit A.17 consistency. b. Renumbered remaining steps. c. Step 15, editorial change coy to copy. 21. Exhibit 12.6, ICP Hazard Assessor Checklist a. Step 3, minor editorial change, RLEP 1.1, Checklist 3.9 consistency. b. Step 8, minor editorial change, RLEP 1.1, Checklist 3.9 consistency. c. Part 2, Step 8, added not regarding decision to transport injured and contaminated personnel. RLEP 1.1, Checklist 3.9 consistency. 22. Exhibit 12.7, Staging Area Supervisor Checklist- a. Step 2, Revised Warning regarding use of additional electronic equipment in bomb threats. RLEP 1.1, Checklist 3.11 consistency b. Added new step 7 to query staff regarding medications or medical conditions of which the BED needs to be made aware. Renumbered remaining steps. Change requested by SAS. c. Added new step to remind SAS to have RHA confirm habitability of staging area and ICP. 23. Exhibit 12.10, MSG Checklist a. Added a step to have the MSG Liaison get safe route of travel and be dispatched to ICP. b. Added new step for notifying BMI.(Their emergency number is (614) 424-4444) c. Added new step related to preservation of evidence. 24. Exhibit 12.11, Facility Operation Specialist Checklist a. Step 2, added statement to remind FOS to communicate location of event scene operations to the BED. RLEP 1.1, Checklist 3.13 consistency. 25. Exhibit 12.13, ICP Hazard Communicator checklist- a. Step 2 and 3, added shading to text boxes. RLEP 1.1, Checklist 3.10 consistency. b. Added new step 5 to provide PNNL exposure evaluator number for the hazard communicator if needed. 26. Exhibits 13.5, 6, 7 added new emergency equipment maps from the MIT. 27. Exhibit 14.a, 300 Area Protective Actions, revised table per RLEP 1.1, Appendix C, added 300 Area offsite Protective Actions & Recommendations. (nmm/lef)
4/15/05	1	Fixed page numbering to start at page 2 on second page. Updated Bill Buyers phone number to 376-5612, and changed Jeff Rencken as Facility Operations Specialist and Zone warden to Ed Arel. lef

Date	Rev. #	Description
6/13/05	1	Updated BERO contact names & numbers on pages 54-55, changed the MSG Support Lead to Mike Moran on page 62. (lef)
8/22/05	1	Updated ICP Hazards Communicator- Primary/Jack Horne and Alternate/Lindsay Nelson. Updated ICP Hazard Assessor/Radiological – Primary/Bob Free and Alternate/Jack Horne. Updated Zone Wardens: Zone 4A Alternate – Don Kelly; Zone 7 Alternate – Mike Lindberg; and Zone 9 Primary – Lewis Hogan. On page 49, section 9.2.2, added Note: Only Rad Worker 2 trained staff are allowed to volunteer for receiving emergency radiological exposures. lef
9/9/05	1	On page 60, replaced Todd Haynie as Zone Warden for Zone 4A and Industrial Hygiene/Occupational Safety with Don Kelly on page 62, and added Don's cell phone. lef
9/13/05	1	Updated Rad Hazards Assessors to Lindsay Nelsen (primary) and Rob Sitsler (secondary) and Hazards Communicators Jack Horne (primary), Holly Black-Kania (1st Alternate) and Forrest Bronson (2nd Alternate). lef
9/26/05	1	Updated the "300 Area Protective Actions" section 14.1 per TL Bettendorf "the RLEP has changed". Added Table of Contents. Fixed spelling error for Deborah Coffey, SAS Secondary. lef
11/7/05	1	Page 36 - Updated Section 6.1.8 #2a,per TL Bettendorf: • Move personnel from affected area to a safe location. • If the health and safety of the building occupants is such that a building evacuation is necessary, pull the fire alarm. • Notify the PNNL Operations Center at 375-2400. • Notify the Safety and Health Representative. Page 64, Section 12.2.4, Table 14.a per DE Clark: • New 90-day Storage Area SFO: Greg Varljen; • New 90-Day Storage Non-SFO Mark Vucelick. (lef)
2/2006	2006	• Reformatted per F&O guidelines. • Added Cindy Caldwell as Safety & Health approval signature. • Clarified the acronyms throughout the document. • Updated SPC to PNNL Operations Center throughout the BEP. • Section 1.6, added a building specific alarm for Hot cell DP at Randy Thornhill and Randy Scheele's request to standardize HLRF response procedures. • Replaced DOE-RL throughout the document with DOE. • Section 3.2.8, clarified that responses apply to ZW alternates also. • Section 3.3, Clarified where individuals can find the electronic copy of the RPL BEP. • Section 6.1.5.1, added a bullet regarding need to notify the Environmental Support Contact to perform appropriate notifications to the Department of Ecology for a major tank spill. • Section 6.1.9, added clarification that various alarms may occur on Radiological Material Release. • Section 6.3, editorial change. • Section 6.4.2 "Hostage Situation/Armed Intruder/Violence in the Workplace" added information based on drills from violence in the workplace. • Section 7.5, corrected location of the air compressor isolation valve. • Section 7.9, corrected location of the local disconnect switch for RPL ramp sump pump. • Section 8.2. Added clarification for the need to notify the Dept of Ecology within 30 days after an incident involving a release from a tank system to the environment that does not result in an activation of the contingency plan. • Attachment 13.1, update BERO listing to new members. • Attachment 13.1, updated BED (Francis Buck), 1st Alt BED (Bill Buyers), 2nd Alternate N/A. • Attachment 13.1, updated ICP Communicator adding Karla Smith as Primary Responder; Robert Schumacher as 1st Alternate and Francis Buck as 2nd Alternate.

Date	Rev. #	Description
		• Attachment 13.5, updated names for ZW assignments. • Attachment 13.6, New Staging Area Supervisor- Deborah Coffey, 1st Alternate- Karla Smith, 2nd Alternate-N/A. • Attachment 13.7, added the secondary phone line number for the PNNL Operations Center. • Exhibit 13.13 – Handling of Radiologically Contaminated/Deceased Worker Checklist, added a step to verify the appropriate DOE Facility Representative has been notified. (nmm) • Added Zone Warden Area maps and updated other building MIT maps. • SES: RPL-2006-021D. FG Buck. (lef)
4/25/06	2006	○ Update FG Buck cell phone: 528-0141 and WT Buyers cell phone 521-0217. ○ Page 65; Deleted Forrest Bronson as ICP Hazards Communicator. Replaced Jack Horne/ICP Hazards Assessor (Radiological)/Primary with Bob Free. Jack Horne is now 1st Alternate and Holly Black-Kania is 2nd Alternate. ○ Page 65: ICP Hazards Communicator: Lindsay Nelson/Primary and Rob Sitsler/1st Alternate. ○ Replaced MSG Checklist with current checklist from the EP Office, per TL Bettendorf. (lef) CE: RPL-2004-194D. USQE FG Buck.
8/10/06	2006	• Update 1st Alternate BED to Sanjay Sanan. • Deleted home phone number for Lori Ashbeck • Updated Management Support Group Contact: RD Sharp(lef) CE: RPL-2004-194D. USQE/FG Buck.
10/24/06	2006	• Fixed spelling and grammar errors, web link errors, Attachment numbers, and font sizes throughout document. • Attachment 13.1 – New Assisting Communicator #1 – Lori Ashbeck. New ICP Hazards Communicators: 1- Jack Horne, 2 – Bob Free, and 3 – Rob Sitsler. New ICP Hazards Assessors – 1- Bob Free, 2- Jack Horne, and 3- Holly Black-Kania. • Attachment 13.7 - New MSG Contact – Reed Sharp. • CE: RPL-2004-194D. FG Buck/USQE 10/24/06
1/10/07	2006	Updates to the BERO staff, Waste Management, and Communicators are as follows: *Primary: Assisting Communicator: Lori Arel (W:376-3611, H:734-1574)* *2nd Alternate ICP Hazards Communicator: Terry Milham (Work: 376-0700)* *1st Alternate ICP Recorder: Lori Arel (W: 376-3611, H: 734-1574)* *Zone 4A Primary: Ron Del Mar (376-2822)* *Zone 5 Primary: Lewis Hogan (372-1427)* *Zone 8: Secondary: John Logan (376-1382)* *Zone 9: Primary: John Logan (376-1382)* *1st Alternate Staging Area Supervisor: Jeff Andrie (376-0502)* *2nd Alternate Staging Area Supervisor: Teresa Schlotman (376-3206)* *Under Waste Management: Remove Greg Varljen, Add Ron Del Mar (W:376-2822, C: 530-8308)* CE: RPL-2004-194D. FG Buck/USQE
2/5/07	2007-1	Annual BEP Update: • Pg. 5, editorial correction, second paragraph, "whose" • Pg. 9, deleted last sentence in paragraph 1.7. Incorrect statement. • Throughout the BEP deleted specific section reference number to PNNL-MA-110. MA-110 has been revised and all the references are now out of date. Removing section references will allow changes to be made to PNNL-MA-110 without requiring BEP revision. (pgs, 12, 21, 46 • Pg 14, added a responsibility to the BED Section 3.1 for planning conducting and documenting emergency drills per MA 110 requirements. • Pg 41, updated the step 2 of the Bomb Threat actions per RLEP 1.1 • Pg 48, Section 9.1 first bullet, revised wording related to location of Class D fire extinguishers if reactive metals are present.

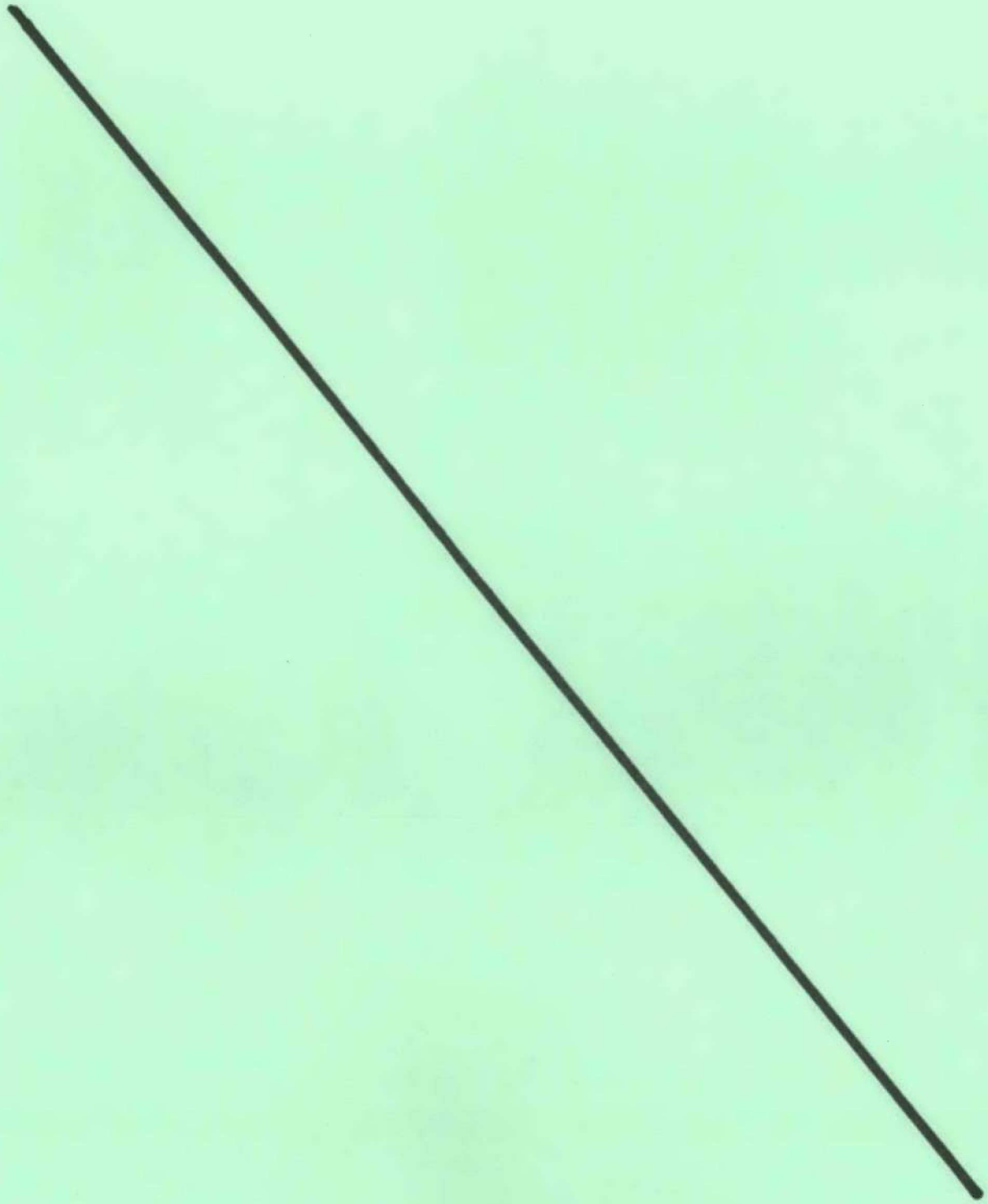
Date	Rev. #	Description
		• Pg 63, Updated drawing to show building removals and be consistent with TSD maps. • PG 65, new Alternate Assisting Communicator and Primary ICP Recorder- Terri Mars. 2nd Alternate ICP Hazards Communicator: Woody Buckner. 1st Alt Staging Area Supervisor- Juai Jao and 2nd Alternate – Karl Pool. • Pg 72, replaced Terri Mars/TSD contact with JK Larsen. • Pg 73, Nuclear Work Team Leader cell phone correction 521-6072 and deleted the pager. • Throughout all the checklists, revised RL to Hanford as appropriate. RLEP's refer to everything as Hanford vs. RL now. (e.g., RL Notification Form is now the Hanford Emergency Notification form.) • Pg 79, BED Checklist step 19, revised wording for personnel health advocate notification per RLEP 1.1, and corrected attachment number to 13.13. • Pg 79, Step 20, added IC or the Liaison Officer, RLEP 1.1 consistency and correct attachment number 13.13. • Pg 79, Step 23, corrected attachment number to 13.18, relocated the note regarding event closeout to step 23. • Pg 81, ICP Communicator Checklist, step 3, revised Hazard Assessors to Hazard Communicator, RLEP 1.1 consistency. • Pg 81, ICP Communicator Checklist, reformatted sub step to A. • Pg 84, Attachment 13.10 Removed ICP from Hazard Assessors checklist title. RLEP 1.1 consistency. • Pg 88, SAS Checklist, editorial change to note in step 2. • Pg 88, Step 4 added note regarding injured personnel. RPL Drill Security 07-02 corrective action. • Pg 91, Attachment 13.13, editorial change, RLEP consistency. • Pg 96, Deleted duplicate steps from the MSG checklist. • Pg 98, FOS checklist, minor editorial change step 1 & 2, RLEP consistency. Added note regarding injured personnel. RPL Drill Security 07-02 corrective action. • Pg 100, ICP Hazard Communicator checklist. Added several bullets for RLEP consistency. (NMM/lef) CAT EX: RPL-2004-194D. FG Buck/USQE.
8/6/07	2007	• Section 1.3, replaced RSEG ownership of the RPL with the Director of Nuclear Operations as senior line manager. • Updated Alternate ICP Communicator, Primary Responder/Chemical Assessor, 1st Alternate Staging Area Supervisor, and 2nd Alternate Staging Area Supervisor, and changed Zones 4 and 4A Zone Wardens per L. Arel. (lef) • CE: RPL-2004-194D. FG Buck/USQE
9/17/07	2007	• Page 65, change title of MSG Lead to MSG Liaison per RPL Bldg Managers office. (lef) • CE: RPL-2004-194D, FG Buck/USQE.
10/29/07	2007	• Replaced Francis Buck with Dan Wandler as BED per BM Durst. • New ICP Communicator 1st Alt: John Logan; ICP Communicator 2nd Alt- NONE. • New FOS 1st Alt: Dan Wandler and no FOS 2nd Alt. • CE: RPL-2004-194D DGW/USQE
11/10/07	2007-2	Major revision consisting of: • New signature page/approvers per LO Casazza. • Section 1.3, revised Owner/Operator to the new NOD organization manager. • Section 1.6, Deleted the word "High" from Glove Box Differential Pressure Alarm (Signal) box • Section 2.3, added references to aDM-001, Document Production & Distribution for making minor and major revisions to this procedure. • Section 6.1.11, added new 3rd bullet "Zone Wardens for Zone 2 and Zone 8, activate flashing red warning lights. • Section 6.4.4, added new 3rd bullet: "Zone Wardens for Zone 2 and Zone 8 activate flashing red warning lights." • Attachment 13.11, Deleted #5: Verify that the Zone 2 and Zone 8 Zone Wardens turned on the flashing red access warning lights identified in the Zone Warden Checklist";

Date	Rev. #	Description
		renumbered remaining items in the checklist. • Attachment 13.12, #1, added "In the event of Reduced Ventilation or Take Cover..." • New BERO staff assignments: 1st Alternate Assisting Communicator: Bob Schumacher; 1st Alternate Facility Operations Specialist; John Logan. • New Zone Warden assignments: Zone 8 Secondary and Zone 9 Primary: Bob Schumacher. (lla/lef) • CE: RPL-2004-194D. DGW
6/13/2008	2008	• Annual review. • Replaced the following checklists from PNL-MA-110: Attachment 13.10, Hazards Assessors; Attachment 13.15, Facility Operations Specialist; Attachment 13.17, ICP Hazards Communicator; and Attachment 13.14, MSG Checklist. Deleted Attachment 13.16, Hanford Emergency Notification Form. • Updated phone numbers for members of the BERO; Attachments 13.1, 13.5, and 13.7. (lef) • RPL-2008-120S. DGW
9/25/08	2008	• Updated signature page with new BED, NOD, and FSR signatures. • Multiple updates to the RPL BERO staff list. • Added PNNL Communicator Notification System to section 1.5. • Updated fire signal n Section 1.5 from gong/electric chime to Slow Whoop followed by voice message. (DGW/lef) • CE: RPL-2004-194D. DGW 9/16/08.
12/1/08	2008	• Replaced crash alarm system with the Telephone Notification System (TNS) and the Communicator Notification System (CNS) as appropriate. • Deleted crash alarm phone location on Attachment 12.5. • Updated maps from MIT. • Changed location of the ICP from 3760 bldg to 350 bldg and added new fax number for the 350 bldg ICP. • SES: RPL-2008-231S DGW/USQE
12/11/08	2008	• Section 1.0, updated WAC [WAC 173-303-350 (3)(d)] per HT Tilden. • Updated location of ICP in 350 building to Room 131. (cak) • Moved Section 6.10 Facility Take Cover to Section 7.0 for consistency throughout ALL BEPs and renumbered all subsequent sections and attachments as appropriate. • Updated BED checklist, #7: Brief hazard assessors and FOS on event and if practical deploy them to the event scene as soon as possible. • Updated BED Checklist #15, added new NOTE: If the location of the ICP has or will be changed call 375-2400 and assure the POC will be made aware of its new location. (lef/TLB) CE: RPL-2008-087D. USQE/DG Wandler 1/7/09.
1/15/09	2008	• Attachment 14.7, Added EOC phone numbers for 350 building: 372-0727, 372-0801 and fax 372-0723. (lef) CE: RPL-2008-087D. DGW/USQE 1/15/09
6/10/09	2009	DSA Update and BERO staff changes: Approval changes: new Waste Operations signature: K McDowell • New Section 1.7 , "Deviations from Technical Safety Requirements" • Section 3.6: Deleted 90-day storage areas in rooms 44, 61, 603, and the East Storage Yard and added the Shielded Analytical Laboratory (SAL) Hot Cells as a new 90-day storage area. • Section 6.4 – moved NOTE from the top of Section 6.4 to the end of subsection 6.4.1.2: *If local audible alarm actuates as a result of a transient condition associated with a known work condition, then it is acceptable (as applicable) to attempt to manually reset the alarm or wait 10 seconds for the alarm to automatically reset before taking emergency actions. If the alarm lasts longer than 10 seconds or the direct cause of the alarm is unknown, then immediately perform emergency actions.*

Date	Rev. #	Description
		• Section 9.2.1: Added 326 Building to the list of emergency decontamination facilities. • Section 12.2: The Emergency Action Levels (EALs) are considered Official Use Only (OUO) information have have been removed from the server, therefore, the EALs statement has been revised removing the weblink and directing staff to obtain copies of the EALs for RPL from the RPL Building Manager. • Attachments 13.5 and 13.7 – updated building maps identifying new locations of the 90-day storage areas. • Attachment 14.0 – per Emergency Preparedness office: deleted Management Support Group Checklist (old Attachment 14.14) – (this checklist is now a standalone procedure; see ADM-EPIP-7.2). Renumbered remaining Attachments in Attachment 14 – 14.14 is now Facility Operations Specialist – Checklisted Duties; 14.15 is Incident Command Post Hazards Communicator Checklisted Duties, and Attachment 14.16 is Emergency Closeout Checklisted Duties. • Attachment 14.1: New BED2 – Skip Kerschner. New ICP Communicators 1- Tony DeGuia, 2- Teresa Campbell, 3- Isadore Henderson. New Assisting Communicator: Kathy Rightmire. New Chemical Assessors: Kevin Sheffield and Abby Nicholson. ICP Hazards Communicator cell phone update • Attachment 14.4 : New BED2 HF Kerschner • Attachment 14.5: Rearranged the attachment to list the zone areas on top of the zone warden assignments. New Zone Wardens: Zone 2 Secondary - Jim Larsen; Zone 3 Secondary - Tim Smith; Zone 5 Primary – Lanson Oukrop; Zone 8 Primary – Jamin Trevino; Zone 9 Secondary – Kristie Lombardo. Attachment 14.7: New Safety & Health Rep: Kevin Sheffield. New Waste Management TSD contact: Kip McDowell. • Updated Staging Area Map. • Attachment 14.16: Per the Emergency Preparedness office, reorganized table for better flow of information. (NMM/CAK/lef)
6/10/09	2009	Replaced 3 Emergency checklists per the Emergency Preparedness office: Attachment 14.4 – Facility Operations Specialist (FOS) Checklist, Attachment 14.8 – BED Hazardous Material Facilities (RPL) Checklist, and Attachment 14.16, (renamed) Event Closeout Form. (lef) USQ: RPL-200
6/15/09	2009	Attachment 14.1, Per the Emergency Preparedness Office and the Department of Ecology, added "Environmental Support Contact" (regulatory notifications only) and the PNNL Operations Center phone number 375-2400. (lef) CX: RPL-2008-087D
1/11/10	2009	Updated names and points of contact management personnel for the BERO. Deleted information Note regarding audible glove box alarms. (kl) Updated Hanford Patrol Operations Center phone number from 373-3800 to 373-0911 per EP Office. (lef)
5/24/10	2010	Updated the 350 Bldg alternate ICP room number. Replaced references for SBMS with HDI. Added steps to fight fires in hot cells and gloveboxes. Updates to criticality alarm tests are now semiannual, not quarterly. Added alpha sentry cams to potential alarms. Updated emergency decontamination facility information. Corrected the location of the compressed air isolation. Added paging system information. Updated names and points of contact for BERO and standardized emergency telephone number list with the rest of the BEPs. Moved the emergency contacts to section 3.0 and added EOC Tech Reps Patello, Thornhill, and Steen. Section 4.1, added Mike Zabel as Primary Chemical Assessor, Doug Falk as 1st Alternate and Abby Nicholson as 2nd Alternate. Deleted zone warden list, moving it to RBAC. New Section 15.0 which lists all referenced documents and weblinks for emergency preparedness checklists. Section 4.1 – deleted MSG Recorder, Barb Ekstrom per EP Office. Per Environmental Managements' request, section 11.4 has been revised to list the items in the spill kits. Section 8.1.2.2, Facility Take Cover event –inside RPL, added: Staff should refrain from eating and drinking during a take cover event if physically able, until an appropriate

Date	Rev. #	Description
		evaluation of the event can be made. (cak/tlb/lef)
10/20/10	2010	• Added the following Note in sections 6.1.1, 6.1.2, 6.2, 6.2.2, 6.2.3, 7.4, 6.5, 6.7, 6.8 and added it as a step in 6.9.2: If appropriate, classify the event using the RPL EALs. • Updated first floor and basement emergency equipment maps. • Merged Sections 3.0, Emergency Telephone Numbers and Section 4.0 Building Emergency Response Organization into one section/Section 3.0, Building Emergency Response Organization and adjusted section reference numbers throughout the document. • Replaced Kip McDowell with KM McDonald as Low Level TSD contact. • Deleted room 32 as TSD in section 3.19. (tlb/cak/lef)
4/7/2011	2011	• Updated emergency equipment and evacuation route maps. • Updated phone numbers due to VOIP system installation • Changed location of the decon shower to 3410. • Updated locations of TSDs and 90-day storage areas per EL Grohs. • Updated name for AMH to CSC Hanford Occupational Health Services (CSC HOHS). • Updated S&H Rep from D. Falk to M. Zabel. (cak/lef)
6/17/2011	2011a	Update section 1.7 in accordance with revised wording in TSR AC 5.11. Added clarification notes in sections 6.1.1.4 and 10.2 that fire extinguishers with glove piercing tips are for HFD use only. (tac)
8/15/11	2011b	Updated BERO staff listing. Added 373-0911 to be dialed from cell phones and added Note about Becquerel conversion to dpm in Section 6.4. (CAK/lef)
9/20/11	2011-2	Verified HDI title changes and F&O organizational titles are correct. Section 5.5, updated Criticality Hazards. Section 6.5 was also revised. Updated the location of the RPL building within in the 300 area and the PIV locations. (cak/lef)
1/30/12	2012	Further definition of restart process consistent with DOE O 420.1B, Facility Safety. Added references to PNNL institutional plans/ procedures for event recovery.
1/1/13	2013	Updated per HF Kerschner's request, changing Section 11.0 and staff response to visitors. Updated HDI references. Updated PNNL's Occupational Health Provider (OH). Revised references for ADM-EPIP-7.2 to ADM-EPIP-2.0. Updated mailing address: zip code to 99354. Deleted 3790 as an alternate staging area. Changed Section 6.9 from Hostage Situation/Armed Intruder to "Active Shooter in Building." Revised Section 11.0. Added more information about H&V emergency shutdown
3/14/13	2013a	Replaced emergency equipment maps due to emergency equipment changes.
9/25/13	2013-1	Changed BED/Bldg Manager from CA Kooiker to Eric Hanson (acting). Changed Utility Operations Supervisor from RL McKinney to D Cravens, deleted supervisor's pager. Changed Deborah Coffey's contact information. Added step 6.6.1.1 – Verify that all equipment and heat generating devices inside of laboratory gloveboxes and inside of hot cells are shut down. Step 6.8.1.4 modified to allow RF equipment outside 100 feet from the RPL. Revised staging area location to the south end of lane #9. Added Alternate Staging Area Map, Attachment 8. Added CS Dreyer as BED3.
1/29/14	2014	Updated to include the North Storage Pad as part of the RPL facility. Deleted "klaxon horn" from "Take Cover" alarms in Section 1.5 Identified new Hazards Communicators and Hazards Assessors. Updated Section 8.0 and reformatted cover page; updated BM to PT Saueressig
2/27/14	2014-1	Changed organization title from EMSD to EP&RP (Environmental Protection & Regulatory Programs). Changed BEDs: BED: PT Saueressig, BED1: EM Hanson and changed FOS to DG Wandler. Updated emergency equipment and evacuation route maps. Replaced UO WTL Don Cravens with TJ Vanderlinden and changed EOC RPL Tech Rep from Gertrude Patello to Karl Pool. Section 2.2 – Acronyms – added PNSO Section 3.2 – Added PNSO representatives to table Section 3.3 – Added PNSO representatives to graphic Updated links to emergency preparedness forms.

Date	Rev. #	Description
5/15/14	12	Changed revision number to 12 to support Vault implementation. Changed Safety & Health Rep to Pam Aardal Changed Chemical Assessor assignments: Added Pam Aardal as Primary Responder moved Mike Zabel to 1st Alternate and moved Doug Falk to 2nd Alternative. Changed terminology for MSDS (Material Safety Data Sheets) to SDS (Safety Data Sheets). Updated Zone Warden maps. Changed Staging Area Supervisor Assignments: Moved Teresa Schlotman to 1st Alternate and added Jake Bohlke as 2nd Alternate. Changed Facility Operations Specialist Assignments: Added Johnny Trevino as 2nd Alternative.
10/20/14	13	Section 3.19, added rooms 610, 3714 pad, and portions of 603 and 604A to the TSD locations. Unique Program Laboratory Expertise: added cell numbers for Trevor VanArsdale and John Holland. Added footnote language to be the same style as used in DOE 94-02 per Harold Tilden's request per the 3/2014 Ecology inspection. Replaced Ed Arel/WTL with Don Cravens as WTL; replaced Pam Aardal/S&H Rep with Mike Zabel. Pts/lef Changed reference to ADM-EPIP-8.0 (retired) to ADM-EPIP-3.0, Recovery Plan per TL Bettendorf and change approved by PT Saueressig prior to release of this revision. Changed out the 300 Area site map (Attachment 9). Updated Section 12.1 per the recent DOE-0223 updates (TLB). During routing, the following were requested to be added to the BEP per PT Saueressig: 1. Adding a note prior to the first footnote. 2. Changing the table so that only take cover addresses gathering in the lunchroom. 3. Changing the footnote to make it clear and concise (less redundant). This would apply to all of the footnotes. 4. Adding the permit to the reference documents.
2/12/15	14	Added Jason Sweesy to section 3.2 as the Primary Chemical Hazards Assessor (moved Mike Zabel and Doug Falk to 1st and 2nd Alternate, respectively). Revised Section 8.2, Air. Added new section 8.10, Decontamination Shower/Sink. This information was included in section 9.2.1 and Attachment 1. Updated pages 52 and 53 with the latest 300 Area Protective Actions info from RLEP 1.1, 4/30/14 per TL Bettendorf. Changes during approval per HT Tilden and approved per PT Saueressig: footnote corrections and added the requirement to maintaining a controlled copy BEP in the 325 HWTUs operating record. Section 3.20, moved the paragraph break between the first and second paragraphs so that only the second paragraph is RCRA enforceable. (htt/pts) 3/10/15: per email from CS Dreyer: USQ RPL-2015-058S is still valid for these changes. Thank you. (csd)



331-C Storage Unit

Change Control Log

Change Control Logs ensure that changes to this unit are performed in a methodical, controlled, coordinated and transparent manner. Each unit addendum will have a "**Last Modification Date**" which represents the last date the portion of the unit has been modified. The "**Modification Number**" represents Ecology's method for tracking the different versions of the permit. This log will serve as an up to date record of modifications and version history of the unit.

Last modification to 331-C Storage **March 31, 2011**

Addenda	Last Modification Date	Modification Number
Conditions	03/31/2011	
A. Part A	03/31/2011	
B. Reserved		
C. Reserved		
D. Reserved		
E. Reserved		
F. Reserved		
G. Reserved		
H. Closure Plan	03/31/2011	

PART III, OPERATING UNIT GROUP 15 CONDITIONS
331-C STORAGE UNIT

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PART III, OPERATING UNIT GROUP 15 CONDITIONS
331-C STORAGE UNIT

UNIT DESCRIPTION

The 331-C Storage Unit was a dangerous waste container storage unit located within the south portion of the 300 Area. The unit was used for the collection, consolidation, packaging, storage, and preparation for transport and disposal of dangerous waste. The waste stored at the 331-C Storage Unit consisted of listed waste from specific and nonspecific sources, discarded commercial chemical products, characteristic waste, and criteria waste.

The 331-C Storage Unit is divided into a number of separate locations equipped with independent secondary containment to ensure the segregation of incompatible wastes and proper management and removal of any spills or leaks that might occur. A small, laboratory-style fume hood on the south wall in the storage area was used for waste verification, compatibility testing, and small-volume waste work.

On February 8, 2011, Pacific Northwest National Laboratory (PNNL) completed removal of waste stored at the 331-C Storage Unit. The majority of the waste stored at the 331-C Storage Unit was transferred offsite for treatment and disposal. The 331-C Storage Unit was transferred to Washington Closure Hanford (WCH) contractor (Co-Operator) in February 2011, to undergo closure. No further waste management activities will be conducted in the facility prior to building removal and closure. The facility will be maintained under a surveillance and maintenance program prior to initiating removal actions.

The 331-C Storage Unit Resource Conservation and Recovery Act (RCRA) closure will be integrated with the 300 Area Comprehensive Environmental Response Compensation, and Liability Act (CERCLA), removal action, which will be accomplished by demolition of the building, to include the floor slab and any below-grade structures (e.g., containment sumps). The 331-C Storage Unit is scheduled for CERCLA removal in accordance with the *Removal Action Work Plan for River Corridor General Decommissioning Activities*, DOE/RL-2010-34, Rev. 0.

LIST OF ADDENDA SPECIFIC TO OPERATING UNIT GROUP 15

Addendum A Part A Form, dated March 31, 2011

Addendum H Closure Plan, dated March 31, 2011

DEFINITIONS

The term **"Cell"** means a discrete area for storing a given type of waste within its own secondary containment, a basic unit of storage, a narrow confining area.

ACRONYMS

Reserved

III.15.A COMPLIANCE WITH UNIT-SPECIFIC PERMIT CONDITIONS

III.15.A.1 The Permittees will comply with all conditions in this Chapter and its addenda with respect to dangerous waste management and dangerous waste management units in the 331-C Storage Unit, in addition to requirements in Permit Parts I and II.

III.15.B RESERVED

III.15.C RESERVED

III.15.D RECORDKEEPING AND REPORTING

III.15.D.1 The Permittees will place the following into the Hanford Facility Operating Record, 331-C Storage Unit File required by Permit Condition II.I.2: [WAC 173-303-380]

III.15.E RESERVED

III.15.F RESERVED

III.15.G RESERVED

III.15.H RESERVED

III.15.I RESERVED

III.15.J RESERVED

III.15.K CLOSURE

III.15.K.1 The Permittees will close the 331-C Storage Unit in accordance with Addendum H, Closure Plan. [WAC 173-303-610(3)(a)]

III.15.K.2 The Permittees will amend the Closure Plan in accordance with Permit Condition II.J.2 and Addendum H. [WAC 173-303-610(3)(b)]

III.15.K.3 The Permittees will provide Ecology with a Notice of Closure according to Permit Condition II.J.1. [WAC 173-303-610(3)(c)]

III.15.L POST CLOSURE

Reserved

ADDENDUM A
PART A FORM

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1

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Dangerous Waste Permit Application Part A Form

Date Received	Reviewed by:	Date:
Month Day Year	Approved by:	Date:

I. This form is submitted to: (place an "X" in the appropriate box)

☒	Request modification to a final status permit (commonly called a "Part B" permit)
☐	Request a change under interim status
☐	Apply for a final status permit. This includes the application for the initial final status permit for a site or for a permit renewal (i.e., a new permit to replace an expiring permit).
☐	Establish interim status because of the wastes newly regulated on: (Date)
	List waste codes:

II. EPA/State ID Number

W	A	7	8	9	0	0	0	8	9	6	7

III. Name of Facility

US Department of Energy – Hanford Facility

IV. Facility Location (Physical address not P.O. Box or Route Number)

A. Street

825 Jadwin

City or Town	State	ZIP Code
Richland	WA	99352

County Code (if			County Name
0	0	5	Benton

B. Land Type	C. Geographic Location Latitude (degrees, mins, secs)	Longitude (degrees, mins, secs)	D. Facility Existence Date Month Day Year
F	Refer to TOPO Map (Section XV.)		03 02 1943

V. Facility Mailing Address

Street or P.O. Box

P.O. Box 550

City or Town	State	ZIP Code
Richland	WA	99352

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VI. Facility contact (Person to be contacted regarding waste activities at facility)		
Name (last)	**(first)**	
McCormick	Matthew	
Job Title	**Phone Number (area code and number)**	
Manager	(509) 376-7395	
Contact Address		
Street or P.O. Box		
P.O. Box 550		
City or Town	**State**	**ZIP Code**
Richland	WA	99352

VII. Facility Operator Information		
A. Name	**Phone Number**	
Department of Energy Owner/Operator Washington Closure Hanford, Co-Operator for 331-C Storage Unit*	(509) 376-7395 (509)372-9951 *	
Street or P.O. Box		
P.O. Box 550 2620 Fermi Avenue*		
City or Town	**State**	**ZIP Code**
Richland	WA	99352
B. Operator Type	F	
C. Does the name in VII.A reflect a proposed change in operator?	☐ Yes ☒ No	
If yes, provide the scheduled date for the change:	**Month / Day / Year**	
D. Is the name listed in VII.A, also the owner? If yes, skip to Section VIII.C.	☐ Yes ☒ No	

VIII. Facility Owner Information		
A. Name	**Phone Number (area code and number)**	
Matthew S. McCormick, Operator/Facility-Property Owner	(509) 376-7395	
Street or P.O. Box		
P.O. Box 550		
City or Town	**State**	**ZIP Code**
Richland	WA	99352
B. Owner Type	F	
C. Does the name in VIII.A reflect a proposed change in owner?	☐ Yes ☒ No	
If yes, provide the scheduled date for the change:	**Month / Day / Year**	

IX. NAICS Codes (5/6 digit codes)

A. First							B. Second						
5	6	2	2	1		Waste Treatment & Disposal	9	2	4	1	1	0	Administration of Air & Water Resource & Solid Waste Management Programs
C. Third							**D. Fourth**						
5	4	1	7	1		Research & Development in the Physical, Engineering, & Life Sciences							

X. Other Environmental Permits (see instructions)

A. Permit Type	B. Permit Number	C. Description

XI. Nature of Business (provide a brief description that includes both dangerous waste and non-dangerous waste areas and activities)

The 331-C Storage Unit was a dangerous waste storage unit located in the 300 Area. The unit was used for the collection, consolidation, packaging, storage, and, preparation for transport and disposal of dangerous waste; and was an integral part of the Pacific Northwest National Laboratories (PNNL) waste management system.

Dangerous waste was managed in segregated cells, cabinets, and other areas as described in the 331-C Storage Unit portions of the Hanford Facility Dangerous Waste Permit (WA7890008967). The waste stored at the 331-C Storage Unit consisted of listed waste, waste from nonspecific sources, characteristic waste, and state-only waste derived from research activities and facility operations.

On February 8, 2011, PNNL completed removal of waste stored at the 331-C Storage Unit. The majority of the waste stored at the 331-C Storage Unit was transferred offsite for treatment and disposal. The 331-C Storage Unit was transferred to Washington Closure Hanford (WCH) contractor (Co-Operator) in February 2011, to undergo closure. No further, waste management activities will be conducted in the facility prior to building removal and closure. The facility will be maintained under a surveillance and maintenance program prior to initiating removal actions.

The 331-C Storage Unit RCRA closure will be integrated with the 300 Area Comprehensive Environmental Response Compensation, and Liability Act (CERCLA), removal action, which will be accomplished by demolition of the building, to include the floor slab and any below-grade structures (e.g., containment sumps). The 331-C Storage Unit is scheduled for CERCLA removal in accordance with the *Removal Action Work Plan for River Corridor General Decommissioning Activities*, DOE/RL-2010-34, Rev. 0.

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EXAMPLE FOR COMPLETING ITEMS XII and XIII (shown in lines numbered X-1, X-2, and X-3 below): A facility has two storage tanks that hold 1200 gallons and 400 gallons respectively. There is also treatment in tanks at 20 gallons/hr. Finally, a one-quarter acre area that is two meters deep will undergo *in situ vitrification*.

Section XII. Process Codes and Design Capacities								Section XIII. Other Process Codes								
Line Number		A. Process Codes (enter code)			B. Process Design Capacity		C. Process Total Number of Units	Line Number		A. Process Codes (enter code)			B Process Design Capacity		C. Process Total Number of Units	D. Process Description
					1. Amount	2. Unit of Measure (enter code)							1. Amount	2. Unit of Measure (enter code)		
X	1	S	0	2	1,600	G	002	X	1	T	0	4	700	C	001	In situ vitrification
X	2	T	0	3	20	E	001									
X	3	T	0	4	700	C	001									
	1	S	0	1	20,000	G	001		1							
	2								2							
	3								3							
	4								4							
	5								5							
	6								6							
	7								7							
	8								8							
	9								9							
1	0							1	0							
1	1							1	1							
1	2							1	2							
1	3							1	3							
1	4							1	4							
1	5							1	5							
1	6							1	6							
1	7							1	7							
1	8							1	8							
1	9							1	9							
2	0							2	0							
2	1							2	1							
2	2							2	2							
2	3							2	3							
2	4							2	4							
2	5							2	5							

XIV. Description of Dangerous Wastes

Example for completing this section: A facility will receive three non-listed wastes, then store and treat them on-site. Two wastes are corrosive only, with the facility receiving and storing the wastes in containers. There will be about 200 pounds per year of each of these two wastes, which will be neutralized in a tank. The other waste is corrosive and ignitable and will be neutralized then blended into hazardous waste fuel. There will be about 100 pounds per year of that waste, which will be received in bulk and put into tanks.

Line Number	A. Dangerous Waste No. (enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Processes (1) Process Codes (enter)	D. Processes (2) Process Description [If a code is not entered in D (1)]
X 1	D 0 0 2	400	P	S 0 1 T 0 1	
X 2	D 0 0 1	100	P	S 0 2 T 0 1	
X 3	D 0 0 2				Included with above
1	D 0 0 1	10,000	K	S 0 1	Includes Debris
2	D 0 0 2	10,000	K	S 0 1	Includes Debris
3	D 0 0 3	1000	K	S 0 1	Includes Debris
4	D 0 0 4	1000	K	S 0 1	Includes Debris
5	D 0 0 5	1000	K	S 0 1	Includes Debris
6	D 0 0 6	1000	K	S 0 1	Includes Debris
7	D 0 0 7	5,000	K	S 0 1	Includes Debris
8	D 0 0 8	5,000	K	S 0 1	Includes Debris
9	D 0 0 9	1000	K	S 0 1	Includes Debris
10	D 0 1 0	1000	K	S 0 1	Includes Debris
11	D 0 1 1	1000	K	S 0 1	Includes Debris
12	D 0 1 2	220	K	S 0 1	Includes Debris
13	D 0 1 3	220	K	S 0 1	Includes Debris
14	D 0 1 4	220	K	S 0 1	Includes Debris
15	D 0 1 5	220	K	S 0 1	Includes Debris
16	D 0 1 6	220	K	S 0 1	Includes Debris
17	D 0 1 7	220	K	S 0 1	Includes Debris
18	D 0 1 8	2,000	K	S 0 1	Includes Debris
19	D 0 1 9	2,000	K	S 0 1	Includes Debris
20	D 0 2 0	220	K	S 0 1	Includes Debris
21	D 0 2 1	220	K	S 0 1	Includes Debris
22	D 0 2 2	2,000	K	S 0 1	Includes Debris
23	D 0 2 3	2,000	K	S 0 1	Includes Debris
24	D 0 2 4	2,000	K	S 0 1	Includes Debris
25	D 0 2 5	2,000	K	S 0 1	Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No.	B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Process (1) Process Codes	D. Process (2) Process Description [If a code is not entered in D (1)]
26	D026	2,000	K	S01	Includes Debris
27	D027	220	K	S01	Includes Debris
28	D028	220	K	S01	Includes Debris
29	D029	220	K	S01	Includes Debris
30	D030	220	K	S01	Includes Debris
31	D031	220	K	S01	Includes Debris
32	D032	220	K	S01	Includes Debris
33	D033	220	K	S01	Includes Debris
34	D034	220	K	S01	Includes Debris
35	D035	2,000	K	S01	Includes Debris
36	D036	220	K	S01	Includes Debris
37	D037	2,000	K	S01	Includes Debris
38	D038	2,000	K	S01	Includes Debris
39	D039	2,000	K	S01	Includes Debris
40	D040	2,000	K	S01	Includes Debris
41	D041	220	K	S01	Includes Debris
42	D042	220	K	S01	Includes Debris
43	D043	2,000	K	S01	Includes Debris
44	F001	2,000	K	S01	Includes Debris
45	F002	2,000	K	S01	Includes Debris
46	F003	5,000	K	S01	Includes Debris
47	F004	1,000	K	S01	Includes Debris
48	F005	2,000	K	S01	Includes Debris
49	F027	200	K	S01	Includes Debris
50	F039	200	K	S01	Includes Debris
51	P001	200	K	S01	Includes Debris
52	P002	200	K	S01	Includes Debris
53	P003	200	K	S01	Includes Debris
54	P004	200	K	S01	Includes Debris
55	P005	200	K	S01	Includes Debris
56	P006	200	K	S01	Includes Debris
57	P007	200	K	S01	Includes Debris
58	P008	200	K	S01	Includes Debris
59	P009	200	K	S01	Includes Debris
60	P010	200	K	S01	Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No.	B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Process (1) Process Codes	(2) Process Description [If a code is not entered in D (1)]
61	P011	200	K	S01	Includes Debris
62	P012	200	K	S01	Includes Debris
63	P013	200	K	S01	Includes Debris
64	P014	200	K	S01	Includes Debris
65	P015	200	K	S01	Includes Debris
66	P016	200	K	S01	Includes Debris
67	P017	200	K	S01	Includes Debris
68	P018	200	K	S01	Includes Debris
69	P020	200	K	S01	Includes Debris
70	P021	200	K	S01	Includes Debris
71	P022	200	K	S01	Includes Debris
72	P023	200	K	S01	Includes Debris
73	P024	200	K	S01	Includes Debris
74	P026	200	K	S01	Includes Debris
75	P027	200	K	S01	Includes Debris
76	P028	200	K	S01	Includes Debris
77	P029	200	K	S01	Includes Debris
78	P030	200	K	S01	Includes Debris
79	P031	200	K	S01	Includes Debris
80	P033	200	K	S01	Includes Debris
81	P034	200	K	S01	Includes Debris
82	P036	200	K	S01	Includes Debris
83	P037	200	K	S01	Includes Debris
84	P038	200	K	S01	Includes Debris
85	P039	200	K	S01	Includes Debris
86	P040	200	K	S01	Includes Debris
87	P041	200	K	S01	Includes Debris
88	P042	200	K	S01	Includes Debris
89	P043	200	K	S01	Includes Debris
90	P044	200	K	S01	Includes Debris
91	P045	200	K	S01	Includes Debris
92	P046	200	K	S01	Includes Debris
93	P047	200	K	S01	Includes Debris
94	P048	200	K	S01	Includes Debris
95	P049	200	K	S01	Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No.	B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Process (1) Process Codes	D. Process (2) Process Description [If a code is not entered in D (1)]
96	P 0 5 0	200	K	S 0 1	Includes Debris
97	P 0 5 1	200	K	S 0 1	Includes Debris
98	P 0 5 4	200	K	S 0 1	Includes Debris
99	P 0 5 6	200	K	S 0 1	Includes Debris
100	P 0 5 7	200	K	S 0 1	Includes Debris
101	P 0 5 8	200	K	S 0 1	Includes Debris
102	P 0 5 9	200	K	S 0 1	Includes Debris
103	P 0 6 0	200	K	S 0 1	Includes Debris
104	P 0 6 2	200	K	S 0 1	Includes Debris
105	P 0 6 3	200	K	S 0 1	Includes Debris
106	P 0 6 4	200	K	S 0 1	Includes Debris
107	P 0 6 5	200	K	S 0 1	Includes Debris
108	P 0 6 6	200	K	S 0 1	Includes Debris
109	P 0 6 7	200	K	S 0 1	Includes Debris
110	P 0 6 8	200	K	S 0 1	Includes Debris
111	P 0 6 9	200	K	S 0 1	Includes Debris
112	P 0 7 0	200	K	S 0 1	Includes Debris
113	P 0 7 1	200	K	S 0 1	Includes Debris
114	P 0 7 2	200	K	S 0 1	Includes Debris
115	P 0 7 3	200	K	S 0 1	Includes Debris
116	P 0 7 4	200	K	S 0 1	Includes Debris
117	P 0 7 5	200	K	S 0 1	Includes Debris
118	P 0 7 6	200	K	S 0 1	Includes Debris
119	P 0 7 7	200	K	S 0 1	Includes Debris
120	P 0 7 8	200	K	S 0 1	Includes Debris
121	P 0 8 1	200	K	S 0 1	Includes Debris
122	P 0 8 2	200	K	S 0 1	Includes Debris
123	P 0 8 4	200	K	S 0 1	Includes Debris
124	P 0 8 5	200	K	S 0 1	Includes Debris
125	P 0 8 7	200	K	S 0 1	Includes Debris
126	P 0 8 8	200	K	S 0 1	Includes Debris
127	P 0 8 9	200	K	S 0 1	Includes Debris
128	P 0 9 2	200	K	S 0 1	Includes Debris
129	P 0 9 3	200	K	S 0 1	Includes Debris
130	P 0 9 4	200	K	S 0 1	Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No.	B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Process (1) Process Codes	D. Process (2) Process Description [If a code is not entered in D (1)]
131	P095	200	K	S01	Includes Debris
132	P096	200	K	S01	Includes Debris
133	P097	200	K	S01	Includes Debris
134	P098	200	K	S01	Includes Debris
135	P099	200	K	S01	Includes Debris
136	P101	200	K	S01	Includes Debris
137	P102	200	K	S01	Includes Debris
138	P103	200	K	S01	Includes Debris
139	P104	200	K	S01	Includes Debris
140	P105	200	K	S01	Includes Debris
141	P106	200	K	S01	Includes Debris
142	P108	200	K	S01	Includes Debris
143	P109	200	K	S01	Includes Debris
144	P110	200	K	S01	Includes Debris
145	P111	200	K	S01	Includes Debris
146	P112	200	K	S01	Includes Debris
147	P113	200	K	S01	Includes Debris
148	P114	200	K	S01	Includes Debris
149	P115	200	K	S01	Includes Debris
150	P116	200	K	S01	Includes Debris
151	P118	200	K	S01	Includes Debris
152	P119	200	K	S01	Includes Debris
153	P120	200	K	S01	Includes Debris
154	P121	200	K	S01	Includes Debris
155	P122	200	K	S01	Includes Debris
156	P123	200	K	S01	Includes Debris
157	P127	200	K	S01	Includes Debris
158	P128	200	K	S01	Includes Debris
159	P185	200	K	S01	Includes Debris
160	P188	200	K	S01	Includes Debris
161	P189	200	K	S01	Includes Debris
162	P190	200	K	S01	Includes Debris
163	P191	200	K	S01	Includes Debris
164	P192	200	K	S01	Includes Debris
165	P194	200	K	S01	Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No.				B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Process (1) Process Codes									(2) Process Description [If a code is not entered in D (1)]
166	P	1	9	6	200	K	S	0	1							Includes Debris
167	P	1	9	7	200	K	S	0	1							Includes Debris
168	P	1	9	8	200	K	S	0	1							Includes Debris
169	P	1	9	9	200	K	S	0	1							Includes Debris
170	P	2	0	1	200	K	S	0	1							Includes Debris
171	P	2	0	2	200	K	S	0	1							Includes Debris
172	P	2	0	3	200	K	S	0	1							Includes Debris
173	P	2	0	4	200	K	S	0	1							Includes Debris
174	P	2	0	5	200	K	S	0	1							Includes Debris
175	U	0	0	1	200	K	S	0	1							Includes Debris
176	U	0	0	2	200	K	S	0	1							Includes Debris
177	U	0	0	3	200	K	S	0	1							Includes Debris
178	U	0	0	4	200	K	S	0	1							Includes Debris
179	U	0	0	5	200	K	S	0	1							Includes Debris
180	U	0	0	6	200	K	S	0	1							Includes Debris
181	U	0	0	7	200	K	S	0	1							Includes Debris
182	U	0	0	8	200	K	S	0	1							Includes Debris
183	U	0	0	9	200	K	S	0	1							Includes Debris
184	U	0	1	0	200	K	S	0	1							Includes Debris
185	U	0	1	1	200	K	S	0	1							Includes Debris
186	U	0	1	2	200	K	S	0	1							Includes Debris
187	U	0	1	4	200	K	S	0	1							Includes Debris
188	U	0	1	5	200	K	S	0	1							Includes Debris
189	U	0	1	6	200	K	S	0	1							Includes Debris
190	U	0	1	7	200	K	S	0	1							Includes Debris
191	U	0	1	8	200	K	S	0	1							Includes Debris
192	U	0	1	9	200	K	S	0	1							Includes Debris
193	U	0	2	0	200	K	S	0	1							Includes Debris
194	U	0	2	1	200	K	S	0	1							Includes Debris
195	U	0	2	2	200	K	S	0	1							Includes Debris
196	U	0	2	3	200	K	S	0	1							Includes Debris
197	U	0	2	4	200	K	S	0	1							Includes Debris
198	U	0	2	5	200	K	S	0	1							Includes Debris
199	U	0	2	6	200	K	S	0	1							Includes Debris
200	U	0	2	7	200	K	S	0	1							Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No.	B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Process (1) Process Codes	D. Process (2) Process Description [If a code is not entered in D (1)]
201	U028	200	K	S01	Includes Debris
202	U029	200	K	S01	Includes Debris
203	U030	200	K	S01	Includes Debris
204	U031	200	K	S01	Includes Debris
205	U032	200	K	S01	Includes Debris
206	U033	200	K	S01	Includes Debris
207	U034	200	K	S01	Includes Debris
208	U035	200	K	S01	Includes Debris
209	U036	200	K	S01	Includes Debris
210	U037	200	K	S01	Includes Debris
211	U038	200	K	S01	Includes Debris
212	U039	200	K	S01	Includes Debris
213	U041	200	K	S01	Includes Debris
214	U042	200	K	S01	Includes Debris
215	U043	200	K	S01	Includes Debris
216	U044	200	K	S01	Includes Debris
217	U045	200	K	S01	Includes Debris
218	U046	200	K	S01	Includes Debris
219	U047	200	K	S01	Includes Debris
220	U048	200	K	S01	Includes Debris
221	U049	200	K	S01	Includes Debris
222	U050	200	K	S01	Includes Debris
223	U051	200	K	S01	Includes Debris
224	U052	200	K	S01	Includes Debris
225	U053	200	K	S01	Includes Debris
226	U055	200	K	S01	Includes Debris
227	U056	200	K	S01	Includes Debris
228	U057	200	K	S01	Includes Debris
229	U058	200	K	S01	Includes Debris
230	U059	200	K	S01	Includes Debris
231	U060	200	K	S01	Includes Debris
232	U061	200	K	S01	Includes Debris
233	U062	200	K	S01	Includes Debris
234	U063	200	K	S01	Includes Debris
235	U064	200	K	S01	Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No.				B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Process (1) Process Codes									(2) Process Description [If a code is not entered in D (1)]
236	U	0	6	6	200	K	S	0	1							Includes Debris
237	U	0	6	7	200	K	S	0	1							Includes Debris
238	U	0	6	8	200	K	S	0	1							Includes Debris
239	U	0	6	9	200	K	S	0	1							Includes Debris
240	U	0	7	0	200	K	S	0	1							Includes Debris
241	U	0	7	1	200	K	S	0	1							Includes Debris
242	U	0	7	2	200	K	S	0	1							Includes Debris
243	U	0	7	3	200	K	S	0	1							Includes Debris
244	U	0	7	4	200	K	S	0	1							Includes Debris
245	U	0	7	6	200	K	S	0	1							Includes Debris
246	U	0	7	7	200	K	S	0	1							Includes Debris
247	U	0	7	8	200	K	S	0	1							Includes Debris
248	U	0	7	9	200	K	S	0	1							Includes Debris
249	U	0	8	0	200	K	S	0	1							Includes Debris
250	U	0	8	1	200	K	S	0	1							Includes Debris
251	U	0	8	2	200	K	S	0	1							Includes Debris
252	U	0	8	3	200	K	S	0	1							Includes Debris
253	U	0	8	4	200	K	S	0	1							Includes Debris
254	U	0	8	5	200	K	S	0	1							Includes Debris
255	U	0	8	6	200	K	S	0	1							Includes Debris
256	U	0	8	7	200	K	S	0	1							Includes Debris
257	U	0	8	8	200	K	S	0	1							Includes Debris
258	U	0	8	9	200	K	S	0	1							Includes Debris
259	U	0	9	0	200	K	S	0	1							Includes Debris
260	U	0	9	1	200	K	S	0	1							Includes Debris
261	U	0	9	2	200	K	S	0	1							Includes Debris
262	U	0	9	3	200	K	S	0	1							Includes Debris
263	U	0	9	4	200	K	S	0	1							Includes Debris
264	U	0	9	5	200	K	S	0	1							Includes Debris
265	U	0	9	6	200	K	S	0	1							Storage-Container
266	U	0	9	7	200	K	S	0	1							Includes Debris
267	U	0	9	8	200	K	S	0	1							Includes Debris
268	U	0	9	9	200	K	S	0	1							Includes Debris
269	U	1	0	1	200	K	S	0	1							Includes Debris
270	U	1	0	2	200	K	S	0	1							Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No.	B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Process (1) Process Codes	(2) Process Description [If a code is not entered in D (1)]
271	U 1 0 3	200	K	S 0 1	Includes Debris
272	U 1 0 5	200	K	S 0 1	Includes Debris
273	U 1 0 6	200	K	S 0 1	Includes Debris
274	U 1 0 7	200	K	S 0 1	Includes Debris
275	U 1 0 8	200	K	S 0 1	Includes Debris
276	U 1 0 9	200	K	S 0 1	Includes Debris
277	U 1 1 0	200	K	S 0 1	Includes Debris
278	U 1 1 1	200	K	S 0 1	Includes Debris
279	U 1 1 2	200	K	S 0 1	Includes Debris
280	U 1 1 3	200	K	S 0 1	Includes Debris
281	U 1 1 4	200	K	S 0 1	Includes Debris
282	U 1 1 5	200	K	S 0 1	Includes Debris
283	U 1 1 6	200	K	S 0 1	Includes Debris
284	U 1 1 7	200	K	S 0 1	Includes Debris
285	U 1 1 8	200	K	S 0 1	Includes Debris
286	U 1 1 9	200	K	S 0 1	Includes Debris
287	U 1 2 0	200	K	S 0 1	Includes Debris
288	U 1 2 1	200	K	S 0 1	Includes Debris
289	U 1 2 2	200	K	S 0 1	Includes Debris
290	U 1 2 3	200	K	S 0 1	Includes Debris
291	U 1 2 4	200	K	S 0 1	Includes Debris
292	U 1 2 5	200	K	S 0 1	Includes Debris
293	U 1 2 6	200	K	S 0 1	Includes Debris
294	U 1 2 7	200	K	S 0 1	Includes Debris
295	U 1 2 8	200	K	S 0 1	Includes Debris
296	U 1 2 9	200	K	S 0 1	Includes Debris
297	U 1 3 0	200	K	S 0 1	Includes Debris
298	U 1 3 1	200	K	S 0 1	Includes Debris
299	U 1 3 2	200	K	S 0 1	Includes Debris
300	U 1 3 3	200	K	S 0 1	Includes Debris
301	U 1 3 4	200	K	S 0 1	Includes Debris
302	U 1 3 5	200	K	S 0 1	Includes Debris
303	U 1 3 6	200	K	S 0 1	Includes Debris
304	U 1 3 7	200	K	S 0 1	Includes Debris
305	U 1 3 8	200	K	S 0 1	Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No.	B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Process (1) Process Codes	D. Process (2) Process Description [If a code is not entered in D (1)]
306	U140	200	K	S01	Includes Debris
307	U141	200	K	S01	Includes Debris
308	U142	200	K	S01	Includes Debris
309	U143	200	K	S01	Includes Debris
310	U144	200	K	S01	Includes Debris
311	U145	200	K	S01	Includes Debris
312	U146	200	K	S01	Includes Debris
313	U147	200	K	S01	Includes Debris
314	U148	200	K	S01	Includes Debris
315	U149	200	K	S01	Includes Debris
316	U150	200	K	S01	Includes Debris
317	U151	200	K	S01	Includes Debris
318	U152	200	K	S01	Includes Debris
319	U153	200	K	S01	Includes Debris
320	U154	200	K	S01	Includes Debris
321	U155	200	K	S01	Includes Debris
322	U156	200	K	S01	Includes Debris
323	U157	200	K	S01	Includes Debris
324	U158	200	K	S01	Includes Debris
325	U159	200	K	S01	Includes Debris
326	U160	200	K	S01	Includes Debris
327	U161	200	K	S01	Includes Debris
328	U162	200	K	S01	Includes Debris
329	U163	200	K	S01	Includes Debris
330	U164	200	K	S01	Includes Debris
331	U165	200	K	S01	Includes Debris
332	U166	200	K	S01	Includes Debris
333	U167	200	K	S01	Includes Debris
334	U168	200	K	S01	Includes Debris
335	U169	200	K	S01	Includes Debris
336	U170	200	K	S01	Includes Debris
337	U171	200	K	S01	Includes Debris
338	U172	200	K	S01	Includes Debris
339	U173	200	K	S01	Includes Debris
340	U174	200	K	S01	Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No.	B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Process (1) Process Codes	(2) Process Description [If a code is not entered in D (1)]
341	U176	200	K	S01	Includes Debris
342	U177	200	K	S01	Includes Debris
343	U178	200	K	S01	Includes Debris
344	U179	200	K	S01	Includes Debris
345	U180	200	K	S01	Includes Debris
346	U181	200	K	S01	Includes Debris
347	U182	200	K	S01	Includes Debris
348	U183	200	K	S01	Includes Debris
349	U184	200	K	S01	Includes Debris
350	U185	200	K	S01	Includes Debris
351	U186	200	K	S01	Includes Debris
352	U187	200	K	S01	Includes Debris
353	U188	200	K	S01	Includes Debris
354	U189	200	K	S01	Includes Debris
355	U190	200	K	S01	Includes Debris
356	U191	200	K	S01	Includes Debris
357	U192	200	K	S01	Includes Debris
358	U193	200	K	S01	Includes Debris
359	U194	200	K	S01	Includes Debris
360	U196	200	K	S01	Includes Debris
361	U197	200	K	S01	Includes Debris
362	U200	200	K	S01	Includes Debris
363	U201	200	K	S01	Includes Debris
364	U202	200	K	S01	Includes Debris
365	U203	200	K	S01	Includes Debris
366	U204	200	K	S01	Includes Debris
367	U205	200	K	S01	Includes Debris
368	U206	200	K	S01	Includes Debris
369	U207	200	K	S01	Includes Debris
370	U208	200	K	S01	Includes Debris
371	U209	200	K	S01	Includes Debris
372	U210	200	K	S01	Includes Debris
373	U211	200	K	S01	Includes Debris
374	U213	200	K	S01	Includes Debris
375	U214	200	K	S01	Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No.	B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Process (1) Process Codes	(2) Process Description [If a code is not entered in D (1)]
376	U215	200	K	S01	Includes Debris
377	U216	200	K	S01	Includes Debris
378	U217	200	K	S01	Includes Debris
379	U218	200	K	S01	Includes Debris
380	U219	200	K	S01	Includes Debris
381	U220	200	K	S01	Includes Debris
382	U221	200	K	S01	Includes Debris
383	U222	200	K	S01	Includes Debris
384	U223	200	K	S01	Includes Debris
385	U225	200	K	S01	Includes Debris
386	U226	200	K	S01	Includes Debris
387	U227	200	K	S01	Includes Debris
388	U228	200	K	S01	Includes Debris
389	U234	200	K	S01	Includes Debris
390	U235	200	K	S01	Includes Debris
391	U236	200	K	S01	Includes Debris
392	U237	200	K	S01	Includes Debris
393	U238	200	K	S01	Includes Debris
394	U239	200	K	S01	Includes Debris
395	U240	200	K	S01	Includes Debris
396	U243	200	K	S01	Includes Debris
397	U244	200	K	S01	Includes Debris
398	U246	200	K	S01	Includes Debris
399	U247	200	K	S01	Includes Debris
400	U248	200	K	S01	Includes Debris
401	U249	200	K	S01	Includes Debris
402	U271	200	K	S01	Includes Debris
403	U278	200	K	S01	Includes Debris
404	U279	200	K	S01	Includes Debris
405	U280	200	K	S01	Includes Debris
406	U328	200	K	S01	Includes Debris
407	U353	200	K	S01	Includes Debris
408	U359	200	K	S01	Includes Debris
409	U364	200	K	S01	Includes Debris
410	U367	200	K	S01	Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No.				B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Process (1) Process Codes								D. Process (2) Process Description [If a code is not entered in D (1)]
411	U	3	7	2	200	K	S	0	1						Includes Debris
412	U	3	7	3	200	K	S	0	1						Includes Debris
413	U	3	8	7	200	K	S	0	1						Includes Debris
414	U	3	8	9	200	K	S	0	1						Includes Debris
415	U	3	9	4	200	K	S	0	1						Includes Debris
416	U	3	9	5	200	K	S	0	1						Includes Debris
417	U	4	0	4	200	K	S	0	1						Includes Debris
418	U	4	0	9	200	K	S	0	1						Includes Debris
419	U	4	1	0	200	K	S	0	1						Includes Debris
420	U	4	1	1	200	K	S	0	1						Includes Debris
421	W	P	C	B	5,000	K	S	0	1						Includes Debris
422	W	P	0	1	2,000	K	S	0	1						Includes Debris
423	W	P	0	2	2,000	K	S	0	1						Includes Debris
424	W	P	0	3	500	K	S	0	1						Includes Debris
425	W	T	0	1	20,000	K	S	0	1						Includes Debris
426	W	T	0	2	20,000	K	S	0	1						Includes Debris
427	W	S	C	2	5,000	K	S	0	1						Includes Debris
428	K	0	1	3	200	K	S	0	1						Includes Debris
429	K	0	4	4	200	K	S	0	1						Includes Debris

1

XV. Map

Attach to this application a topographic map of the area extending to at least one (1) mile beyond property boundaries. The map must show the outline of the facility; the location of each of its existing and proposed intake and discharge structures; each of its dangerous waste treatment, storage, recycling, or disposal units; and each well where fluids are injected underground. Include all springs, rivers, and other surface water bodies in this map area, plus drinking water wells listed in public records or otherwise known to the applicant within ¼ mile of the facility property boundary. The instructions provide additional information on meeting these requirements.

Topographic map is located in the Ecology Library

XVI. Facility Drawing

All existing facilities must include a scale drawing of the facility (refer to Instructions for more detail).

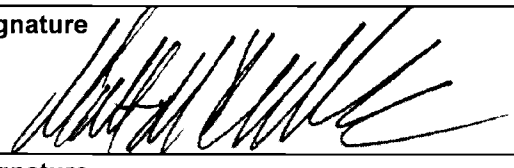
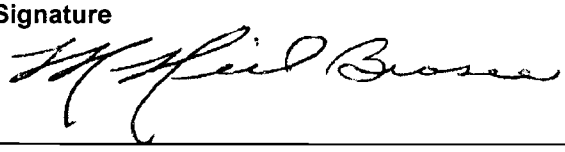
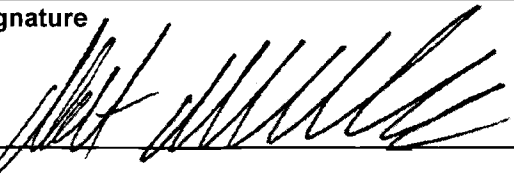
XVII. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, recycling, and disposal areas; and sites of future storage, treatment, recycling, or disposal areas (refer to Instructions for more detail).

1

XVIII. Certifications

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Operator Name and Official Title (type or print) Matthew S. McCormick, Manager U.S. Department of Energy Richland Operations Office	**Signature** 	**Date Signed** 3/9/11
Co-Operator* Name and Official Title (type or print) M. N. Brosee, President Washington Closure Hanford	**Signature** 	**Date Signed** 2.28.11
Co-Operator* – Address and Telephone Number 2620 Fermi Avenue Richland WA 99354 (509)372-9951		
Facility-Property Owner Name and Official Title (type or print) Matthew S. McCormick, Manager U.S. Department of Energy Richland Operations Office	**Signature** 	**Date Signed** 3/9/11

2

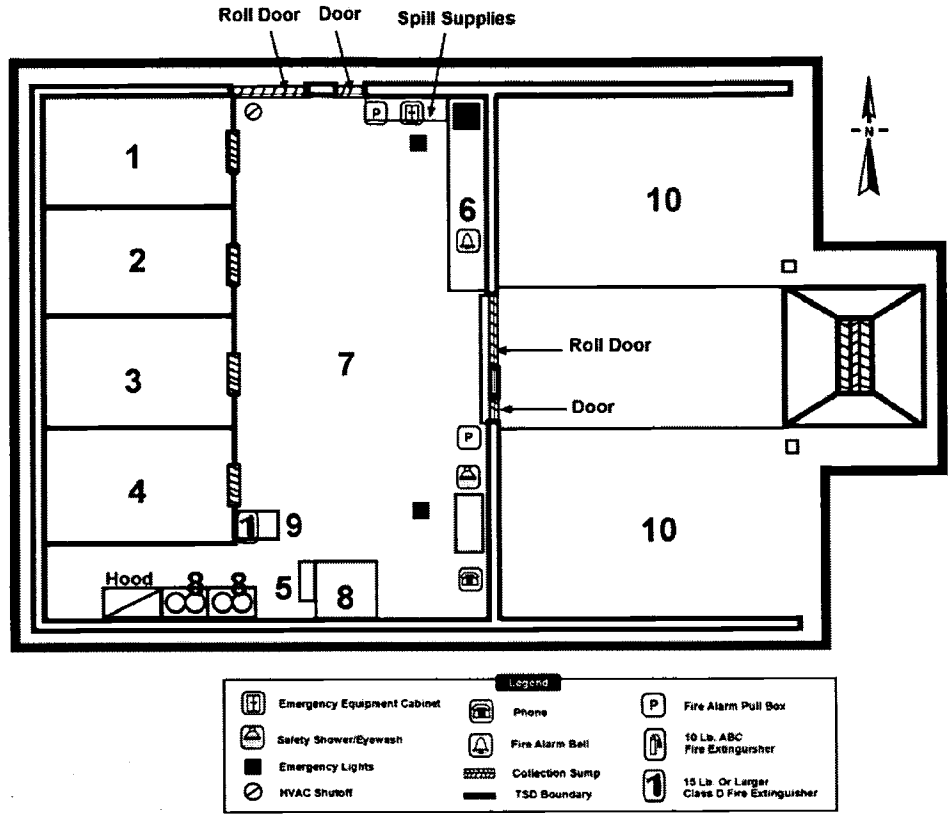
Comments

331-C Storage Unit

331-C Front Photo Taken 1/2010

331-C Inside (following inventory removal) Photo Taken 1/2011

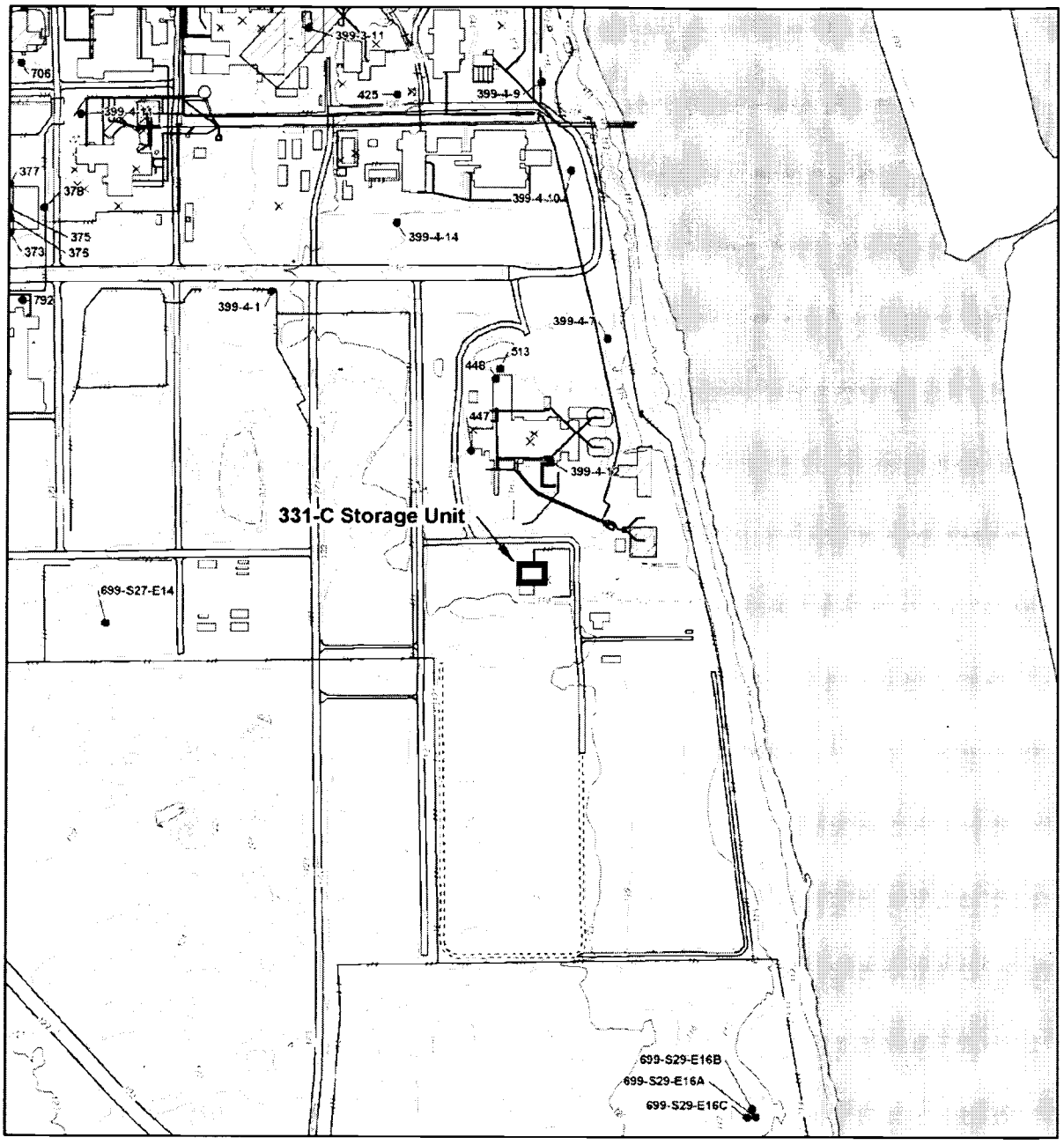
331-C Storage Unit



Legend

1. Acids, Oxidizers
2. Poisons, Class 9
3. Alkaline, WSDW, Organic Peroxides
4. Organics Flammable and Compressed Aerosols
5. Compressed gases
6. Universal/Recycling Storage Area
7. Class 9, WSDW, Non-flammable and Compatible Waste
8. Flammable Storage
9. Explosive Magazine
10. Outdoor Non-regulated Drum Storage

NOTE: This floor plan represented the operational configuration of the facility. No dangerous waste remains within the building and most of the waste management infrastructure has been removed, to include flammable storage cabinets, explosive magazine, compressed gasses, etc.



331-C Storage Unit

Prepared for:
US DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
Created and Published by:
Central Mapping Services
Fluor Hanford, Richland, WA
(509) 373-9076
Intended Use: REFERENCE ONLY
Topographic Data:
1996, Bechtel Hanford, Inc.

Hanford Site

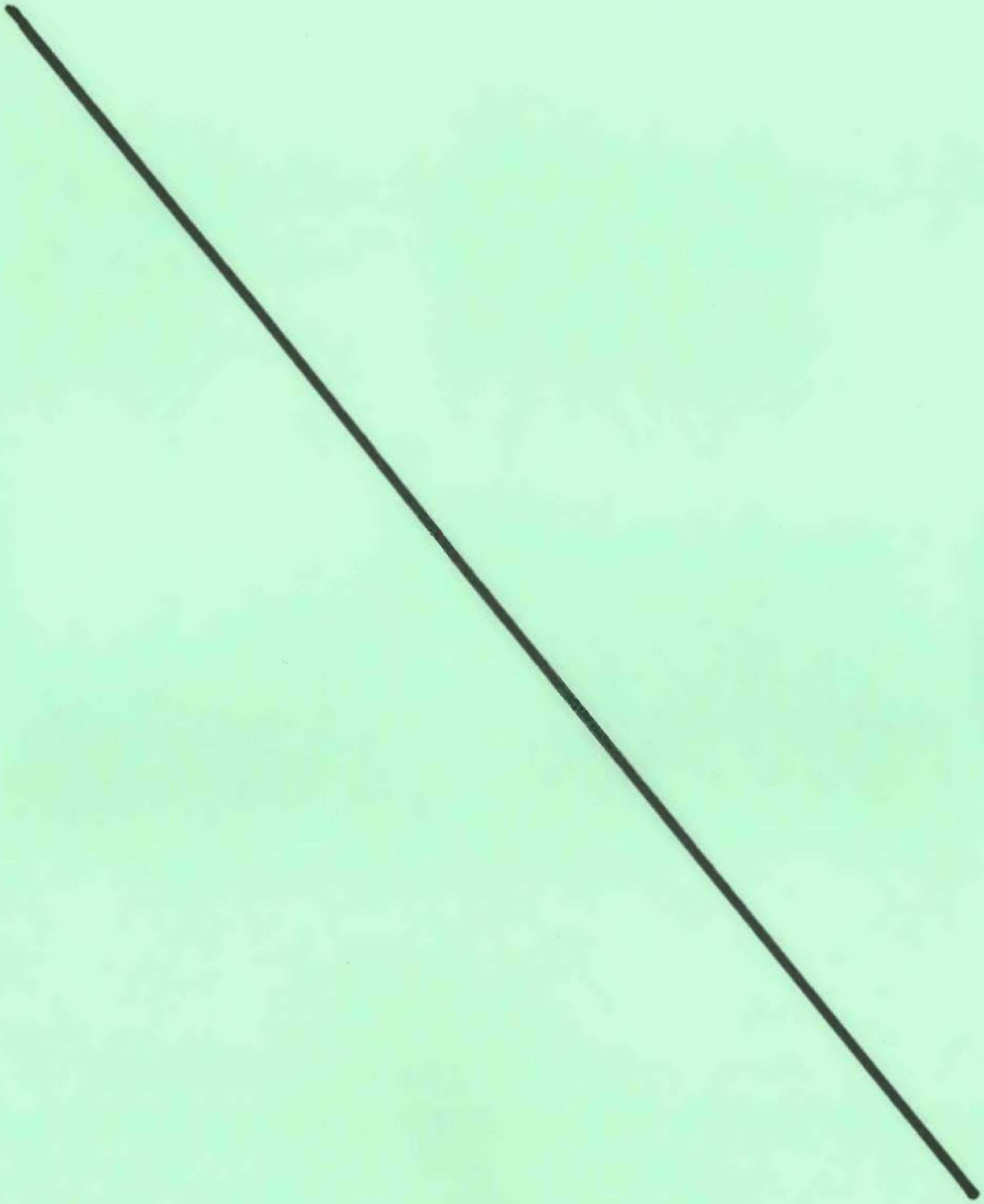
Unit Location

- TSD Unit Boundary
- DOE Operating Areas
- Hanford Facility
- Injection and Withdrawal Wells
- Contours at 1 Meter Intervals
- Depression Contours
- SWMUs and Known Releases
- Linear SWMUs and Known Releases
- Spot SWMUs and Known Releases
- Buildings
- Structures
- Concrete
- Major Roads
- Service Roads
- Railroads
- Fences

Meters: 0 50 100 150 200
Feet: 0 100 200 400 600

CMS

O:\Projects\2005\RCRA_TSD\050614_2ndPriorityFacilityTopos2005_Thompson\Maps\051026_331CStorageUnit_LineDwg_85x11_Rev2.mxd - 8/25/2008 @ 2:01:01 PM



ADDENDUM H
CLOSURE PLAN

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ADDENDUM H
CLOSURE PLAN

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H. CLOSURE PLAN

This addendum, in accordance with the requirements of WAC 173-303-806(4)(a)(xiii), is a plan to ensure safe closure of the 331-C Storage Unit. In accordance with WAC 173-303-610, copies of this closure plan and all revisions will be maintained at 331-C Storage Unit until certification of closure completeness has been submitted and accepted by the Washington State Department of Ecology (Ecology).
A post-closure plan is not required because 331-C Storage Unit is not a land-based unit and all dangerous waste and dangerous waste residues will be removed at the time of closure.

H.1 Closure Plan/Financial Assurance for Closure

This plan presents the activities required for final closure of the 331-C Storage Unit. This closure plan has been updated reflect integration with the River Corridor cleanup project. Partial closure will not be conducted. Closure activities are presented in sufficient detail such that the closure process is understandable and a closure schedule has been developed.

H.1.1 Closure Performance Standard

The following sections identify performance standards for clean closure of the 331-C Storage Unit.

Closure of the 331-C Storage Unit will be conducted in a manner that meets the clean closure performance standards of WAC 173-303-610(2)(a). Because the 331-C Building is also included in the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action for River Corridor General Decommissioning Activities, Resource Conservation and Recovery Act (RCRA) closure activities will be integrated with the existing CERCLA decision and implementation documents. Specifically, the 331-C closure will be achieved through removal of the entire building and foundation in accordance with the *Removal Action Work Plan For River Corridor General Decommissioning Activities* (RAWP), DOE/RL-2010-34, Rev. 0.

Due to the scope of operations of the 331-C Storage Unit and the preventive measures utilized during operations, releases from the unit that could have resulted in soil contamination are not expected.

H.1.2 Closure Activities

This plan identifies the steps necessary to perform final closure of the unit in order to meet the closure performance standards. Closure activities to achieve and verify removal of structures and soil (if necessary) are as follows.

- Remove all dangerous waste inventory (completed).
- Place the facility under Surveillance and Maintenance.
- Perform Deactivation, Decontamination, Decommissioning, and Demolition activities (D4).
- Perform site completion activities that include field surveys and inspections following removal of the building in accordance with Section 2.6 of the RAWP.
- Sample any contaminated soil and compare results to 300-FF-2 Operable Unit cleanup standards for soil (not currently expected to be necessary).
- Certify that closure activities were completed in accordance with the approved closure plan.

H.1.2.1 Maximum Extent of Operations

The 331-C Storage Unit was used to store a variety of different research-related waste. The maximum inventory of waste in storage at any time was constrained by three factors:

- The total amount of dangerous waste in storage at 331-C Storage Unit at any time was not to exceed the design capacity of 20,000 gallons (was typically 2,000 to 5,000 gallons during normal operations).
- The total amount of dangerous waste by hazard class in storage at any one time was not to exceed Uniform Building Code Class B Hazardous Material Quantity Restrictions.

H.1.2.2 Removing Dangerous Wastes

Closure activities have been initiated by removal of all dangerous waste inventory present at 331-C Storage Unit at the start of closure. Inventory removal procedures were identical to the waste handling, packaging, and manifesting activities associated with normal operation of the unit. All dangerous waste present was placed into proper containers. All containers of dangerous waste were manifested, and custody transferred to a dangerous waste transporter having a proper dangerous waste identification number. Waste was transported to a permitted dangerous waste facility for treatment or disposal. No further waste management activities will be conducted in the facility.

H.1.2.3 Surveillance and Maintenance

Prior to D4, the 331-C Storage Unit will be maintained under a surveillance and maintenance program designed to keep site conditions safe. Activities include routine hazard monitoring of the building/structures, safety inspections, and any necessary maintenance activities.

Surveillance and maintenance activities also consist of performing utility isolations in preparation for demolition. Utility isolations place the building in a cold-and-dark configuration that is necessary to perform final demolition safely.

Prior to demolition, the building will be kept in a secured manner (e.g., locked) to prevent unauthorized entry.

H.1.2.3.1 D4

In general, work activities will begin by developing a baseline of the facility conditions. Biological cleanup, general housekeeping, and removal of hazardous materials from building components may also be necessary. Overhead utilities and adjacent concrete and asphalt will be removed, as needed, from the building footprint area to support demolition activities.

Demolition of the building will be performed using conventional means (e.g., excavator with bucket and thumb or shear). Building materials and debris will be transported and disposed of at the Environmental Restoration Disposal Facility.

H.1.2.3.2 Site Completion

Following demolition, site completion will be performed. Field surveys and a visual inspection will be performed to support facility completion. Field survey results will be reviewed to confirm that no contamination was released to the soil. 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 *Sampling and Analysis Plan for River Corridor General Decommissioning Activities* (DOE-RL-2010-041). After an investigation/inspection indicates that no further removal action is necessary, the area will be backfilled with clean soil to achieve a grade that matches the surrounding terrain. Existing borrow pits will be used to obtain clean backfill material.

If in-process measurements or final investigation/inspections indicate soil contamination exists, an evaluation will be performed (e.g., location, site access, contaminants of concern). Remediation would then be addressed in accordance with operable unit remediation requirements under the 300-FF-2 Record of Decision and associated CERCLA documentation.

H.1.2.3.3 Sampling and Analysis

No sampling and analysis of environmental samples (soil or other materials) is expected to be required due to the preventive measures in place during the operating life of the 331-C Storage Unit. If it is determined environmental media were contaminated during operation of the 331-C Storage Unit, this plan will be revised to identify operable unit remediation requirements under the 300-FF-2 Record of Decision and associated CERCLA documentation.

If required, investigative and verification sampling will be performed in accordance with the *Sampling and Analysis Plan for River Corridor General Decommissioning Activities* (DOE-RL-2010-041).

H.1.2.4 Other Activities

Within 60 days of completion of the final closure activities described in this plan, a certification of closure will be submitted to Ecology. This certification will indicate that the 331-C Storage Unit has been closed as described in this plan and that the closure performance standard given in Section H.1 has been met. The certification will be submitted by registered mail and will be signed by the Permittees and an independent Professional Engineer registered in the State of Washington as described below.

The Permittees will certify with the following document or a document similar to it:

> *I, (name), an authorized representative of the U.S. Department of Energy-Richland Operations Office located at the Federal Building, 825 Jadwin Avenue, Richland, Washington, hereby state and certify that the 331-C Storage Unit at the 300 Area, to the best of my knowledge and belief, has been closed in accordance with the attached approved closure plan, and that the closure was completed on (date).*
>
> (Signature and date)

The Permittees will engage an independent Professional Engineer registered in the State of Washington to inspect closure activities, to verify that closure activities are being conducted according to this plan, and to certify that closure has been performed in accordance with this plan.

- Following removal of the building, the engineer will inspect the 331-C Storage Unit site to verify site completion has been achieved.

The inspection by the engineer will be documented in a bound notebook. Notations will include the date and time of the inspection, the area inspected, applicable closure plan requirements inspected, status of area with respect to plan requirements, and name and signature of inspector. This inspection notebook will be made available to Ecology upon request.

Upon completion of closure according to the plan, the Permittees will require the engineer to sign the following document or a document similar to it:

> *I, (name), a registered Professional Engineer, hereby certify, to the best of my knowledge and belief, that I have made visual inspection(s) of the 331-C Storage Unit at the 300 Area and that closure of the aforementioned unit has been performed in accordance with the attached approved closure plan.*
>
> (Signature, date, state Professional Engineer license number, business address, and phone number.)

No other activities are expected to be necessary for clean closure.

H.1.3 Closure of Waste Piles, Surface Impoundments, Incinerators, Land Treatment Facilities, and Miscellaneous Units

This section is not applicable to the 331-C Storage Unit because wastes are not managed in these types of units.

H.1.4 Closure of Landfill Units

This section is not applicable to the 331-C Storage Unit because it does not contain any landfill units and will not be closed as a dangerous waste landfill unit.

H.1.5 Schedule for Closure

Closure activities are summarized in Table H.1. A detailed schedule of closure activities is provided in Table H.2.

H.1.6 Extension for Closure Time

Per WAC 173-303-610(4)(b), the owner or operator of a dangerous waste management unit must complete final closure activities within one hundred eighty days after receiving the final volume of dangerous wastes unless the Department of Ecology has approved an extension to the closure period. In this case, Ecology has granted a 2 year extension to the closure period so that RCRA clean closure of the building can be accomplished through complete removal (i.e., D4) of the building under CERCLA which is scheduled to be completed by March 2013. As stated above, all waste has been removed from the building, the building is being monitored under a surveillance and maintenance program, and the building does not pose a threat to human health and the environment; therefore, it is good business practice to accomplish the clean closure by the RCRA/CERCLA integration approach. No additional extension to this expanded time frame for completion of closure is expected to be necessary. Extensions to this time frame for closure would only be necessary if unexpected conditions were encountered during closure of the unit. If it becomes apparent that closure cannot be completed within the schedule provided on Table H.2, Ecology will be so notified at least 30 days prior to expiration of the closure period. This notification will demonstrate why more time is required for closure and will demonstrate that steps have been taken to prevent threats to human health and the environment and that the unit is in compliance with applicable permit standards.

H.1.7 Closure Cost Estimate

The Hanford Facility is not required to comply with the financial assurance requirements in WAC 173-303-620 based upon Permit Condition II.J.

H.1.8 Financial Assurance Mechanism for Closure

The Hanford Facility is not required to comply with the financial assurance requirements in WAC 173-303-620.

H.2 Notice in Deed

This section is not applicable because the 331-C Storage Unit is not expected to be closed as a dangerous waste disposal unit.

H.3 Post Closure Plan

This section and subsequent subsections are not applicable because the 331-C Storage Unit is expected to be clean closed, not as a land-based unit.

H.4 Liability Requirements

The Hanford Facility is not required to comply with the financial assurance requirements in WAC 173-303-620.

Table H.1. Summary of Closure Activities

Closure Activity Description	Expected Duration
Remove waste inventory – package all dangerous waste, manifest, and transfer to permitted facility for further storage, treatment and/or disposal	N/A
Surveillance and maintenance	18 months
D4	4 months
Site Completion	1 month

1 **Table H.2. Detailed Schedule of Closure**

Action	Schedule
Closure Activities	
Removal of Waste Inventory	Complete
Surveillance and Maintenance	10/2012
D4	2/2013
Site Completion	3/2013
Other Activities	
Certification of Closure to Ecology	60 days following site completion

2
3

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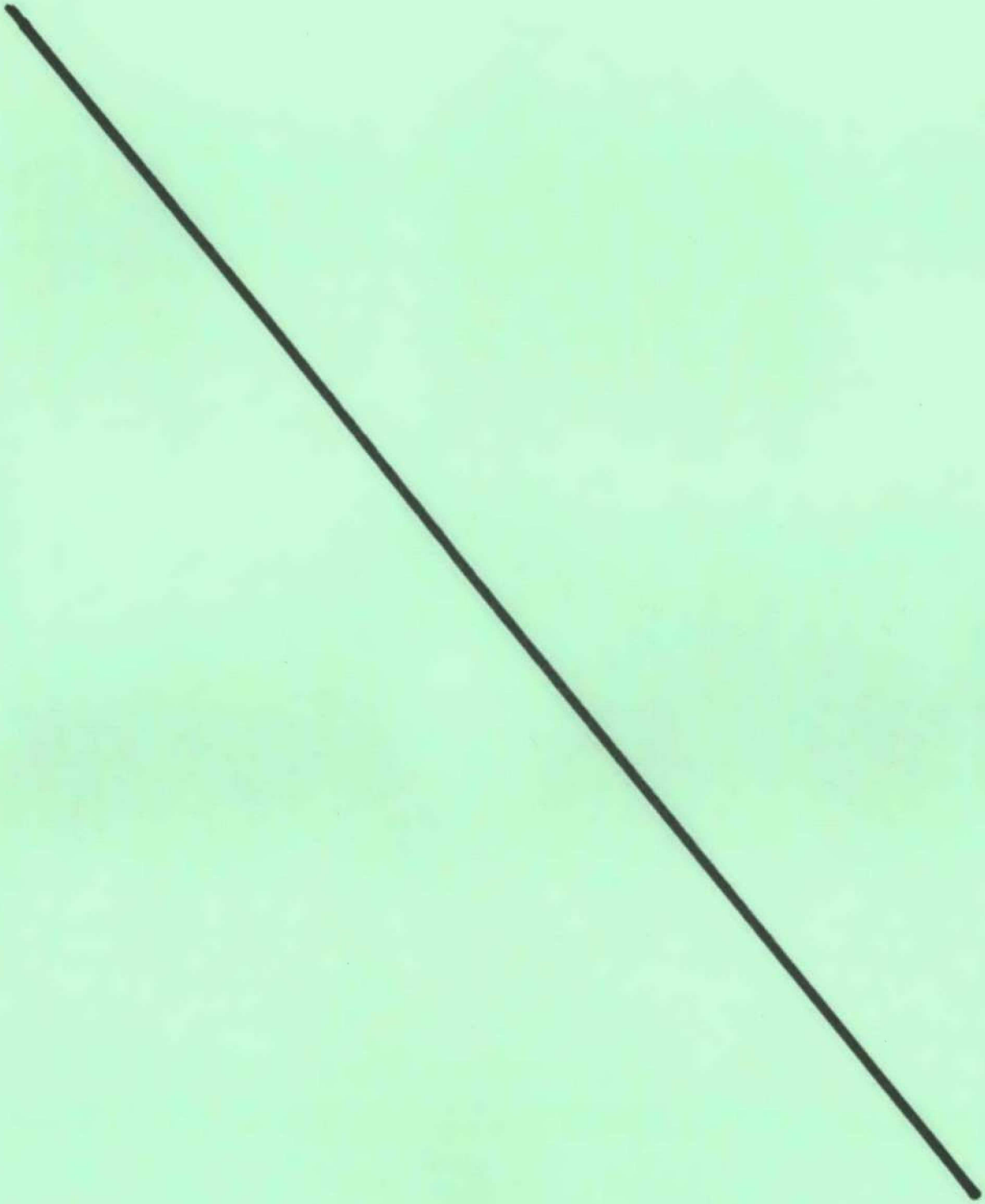

400 Area Waste Management Unit

Change Control Log

Change Control Logs ensure that changes to this unit are performed in a methodical, controlled, coordinated and transparent manner. Each unit addendum will have a "**Last Modification Date**" which represents the last date the portion of the unit has been modified. The "**Modification Number**" represents Ecology's method for tracking the different versions of the permit. This log will serve as an up to date record of modifications and version history of the unit.

Last modification to 400 Area Waste Management Unit **September 30, 2015**

Addenda	Last Modification Date	Modification Number
Conditions	09/30/2015	8c.2015.Q3
A. Part A Form	06/30/2012	
B. Waste Analysis Plan	06/30/2012	
C. Process Information	12/31/2012	
D. Reserved		
E. Procedures to Prevent Hazards	06/30/2009	
F. Preparedness & Prevention	09/30/2012	
G. Personnel Training	06/30/2013	
H. Closure Plan	06/30/2009	
I. Inspection	09/30/2015	8c.2015.Q3
J. Contingency Plan	12/31/2013	

PART III, OPERATING UNIT GROUP 16 PERMIT CONDITIONS
400 AREA WASTE MANAGEMENT UNIT

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PART III, OPERATING UNIT GROUP 16 PERMIT CONDITIONS
400 AREA WASTE MANAGEMENT UNIT

UNIT DESCRIPTION:

The 400 Area Waste Management Unit (WMU) is in the Property Protected Area (PPA) at the Fast Flux Test Facility (FFTF), in Hanford's 400 Area. The 400 Area WMU consists of two container storage units:

- Fuel Storage Facility (FSF, Building 403). The FSF is a large steel-frame, metal-sided, high bay building. Its dimensions are 34 x 27 x 12 meters (112 x 90 x 40 feet). The container storage unit is on the ground-level floor. In it are two large steel boxes that store sodium-contaminated core component pots (CCPs). The Permittees do not plan to store more mixed waste than is currently stored in the facility; however, the FSF is physically capable of storing additional mixed waste. They will store any additional wastes at the 400 Area WMU in the Interim Storage Area.
- Interim Storage Area, 4718 (ISA). The ISA consists of 156 x 247 meters (513 x 247 feet) totally fenced area. This area is for aboveground dry cask storage of spent fuel. A concrete pad in the ISA, which measures 27 x 37 meters (90 x 120 feet), was used for dry cask storage, but will not necessarily be used for mixed waste management. The rest of the ISA surface is gravel. The ISA is generally flat. However, it is graded to drain in accordance with the general drainage plan for the FFTF PPA. Inside the ISA, there is also one building along the west fence line, and open on the side. This building, Building 432A, is not authorized for mixed waste management.

The scale map in Addendum A shows the location of each storage unit. The only mixed waste stored in these two container storage units is elemental sodium, and sodium potassium (D001, D003, and WSC2), sodium hydroxide (D002), and potassium hydroxide (D002) and debris (e.g., piping, equipment, and components) contaminated with elemental sodium, sodium potassium, sodium hydroxide, and potassium hydroxide. The 400 Area WMU will not store, treat, or dispose of bulk metallic sodium or bulk sodium hydroxide.

LIST OF ADDENDA SPECIFIC TO OPERATING UNIT GROUP 16

Addendum A	Part A Form, dated June 30, 2012
Addendum B	Waste Analysis Plan, dated June 30, 2012
Addendum C	Process Information, dated December 31, 2012
Addendum D	Groundwater Monitoring – Reserved
Addendum E	Procedures to Prevent Hazards, dated June 30, 2009
Addendum F	Preparedness and Prevention, dated September 30, 2012
Addendum G	Personnel Training, dated June 30, 2013
Addendum H	Closure Plan, dated June 30, 2009
Addendum I	Inspection Requirements, dated September 5, 2012
Addendum J	Contingency Plan, dated December 31, 2013

DEFINITIONS

The term **"CCP" or Core Component Pot** means one of 109 cylindrical containers, each containing 3.75 gallons of un-reacted sodium totaling 405 gallons, currently stored as mixed waste in the FFTF Fuel Storage Facility. The CCPs were previously filled with sodium and used in the FFTF Interim Decay Storage Vessel to store spent FFTF Driver Fuel Assemblies under inert gas.

ACRONYMS

FFTF	Fast Flux Test Facility
CCP	Core Component Pot
PPA	Property Protected Area
ISA	Interim Storage Area
FSF	Fuel Storage Facility
WMU	Waste Management Unit

III.16.A COMPLIANCE WITH UNIT-SPECIFIC PERMIT CONDITIONS

III.16.A.1 The Permittees will comply with all conditions in this Chapter and its addenda with respect to dangerous waste management and dangerous waste management units in the 400 Area WMU, in addition to conditions in Permit Parts I and II.

III.16.B GENERAL WASTE MANAGEMENT

III.16.B.1 The Permittees are authorized to accept, according to the waste acceptance procedure documented in Addendum B, Section B.2, mixed debris generated from demolition and decommissioning of the Fast Flux Test Facility reactor system containing or contaminated with residual elemental sodium and sodium hydroxide. The Permittee will store these wastes in the ISA.

III.16.B.2 The Permittees are authorized to store core component pots generated prior to the effective date of this permit in two large metal boxes in the 400 Area WMU, FSF.

III.16.B.3 The Permittees are authorized store mixed waste in the ISA up to a maximum capacity of 19,000 gallons.

III.16.B.4 The Permittees will maintain the physical structure of dangerous waste management units in the 400 Area WMU as documented in the Unit Description above and Addendum C, Figures C.1 and C.2.

III.16.B.5 The Permittees will maintain appropriate administrative controls and work practices to ensure that only wastes specified in Permit Condition III.16.B.1, are received by the ISA for storage, and that no co-mingling or cross-contamination of the waste stream specified in Permit Condition III.16.B.1 with any other waste stream may occur.

III.16.C WASTE ANALYSIS

III.16.C.1 The Permittees will have an accurate and complete waste profile for the waste stream identified in Permit Condition III.16.B.1. This waste profile will be signed and dated upon approval by the 400 Area WMU authorized representative. [WAC 173-303-380(1)(a)]

III.16.C.2 The Permittees will make a copy of the waste profile required by Permit Condition III.16.C.1 available upon request. [WAC 173-303-815(2)(b)(ii)]

III.16.D RECORDKEEPING AND REPORTING

III.16.D.1 The Permittees will place the following into the Hanford Facility Operating Record, 400 Area WMU File required by Permit Condition II.I.2. [WAC 173-303-380]

III.16.D.2 Records required by WAC 173-303-380(1)(o), incorporated by reference.

III.16.E SECURITY

III.16.E.1 The Permittees will post warning signs at all entrances to the FSF and the ISA specified in Addendum E, Section E.1.1. [WAC 173-303-310(2)(a)]

III.16.F **PREPAREDNESS AND PREVENTION**

III.16.F.1 The Permittees will comply with the Addendum F, Preparedness and Prevention requirements specific to the 400 Area WMU. [WAC 173-303-340]

III.16.G **CONTINGENCY PLAN**

III.16.G.1 The Permittees will comply with Addendum J, Contingency Plan in addition to the requirements of Permit Condition II.A when applicable. [WAC 173-303-350]

III.16.H **INSPECTIONS**

III.16.H.1 The Permittees will perform inspections of the 400 Area WMU according to Addendum I, Inspection Plan for inspecting all monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that help prevent, detect, or respond to hazards to the public health or the environment pursuant to the requirements of WAC 173-303-320. [WAC 173-303-320(2)]

III.16.I **TRAINING PLAN**

III.16.I.1 The Permittees will include Addendum G unit-specific training requirements in the written training plan required by Permit Condition II.C. [WAC 173-303-330]

III.16.J **OTHER GENERAL REQUIREMENTS**

III.16.J.1 The Permittees will comply with the requirements of WAC 173-303-395(1)(a)-(c), incorporated by reference, for prevention of reaction of ignitable, reactive, or incompatible wastes.

III.16.J.2 **Land Disposal Restriction Requirements**

III.16.J.2.a The Permittees will ensure a schedule of compliance and any applicable associated work requirements are included in the land disposal restrictions report required by the Hanford Federal Facility Agreement and Consent Order (HFFACO) Milestone M-26, incorporated by reference by Permit Condition II.O for treatment and/or acquisition of treatment capacity for wastes which are or are expected to be stored in the 400 Area WMU container storage units.

III.16.K **CLOSURE**

III.16.K.1 The Permittees will close the 400 Area WMU Container Storage Units in accordance with Addendum H, Closure Plan. [WAC 173-303-610(4)]

III.16.L **POST CLOSURE**

Reserved

III.16.M **CRITICAL SYSTEMS**

Reserved

III.16.N **RESERVED**

III.16.O **CONTAINERS**

III.16.O.1 Container Management Standards

III.16.O.1.a The Permittees will ensure that all containers remain in good condition. If a container holding mixed waste is not in good condition (e.g., severe rusting or corrosion, or apparent structural defects), or if it begins to leak, the Permittee must transfer the waste from the container to a container that is in good condition or place the leaking container in an appropriate over-pack container. [WAC 173-303-630(2)]

III.16.O.1.b The Permittees shall ensure that all containers are constructed of carbon steel or stainless steel, or other materials compatible with metallic sodium and sodium hydroxide. [WAC 173-303-630(4)]

III.16.O.1.c The Permittees must remove spilled or leaked waste within secondary containment pursuant to WAC 173-303-630(7)(a)(ii), incorporated by reference.

III.16.O.1.d Requirements for the Fuel Storage Facility

III.16.O.1.e The Permittee will maintain an inert gas (argon or nitrogen) cover within each large metal box to prevent contact of the metallic sodium with the water vapor in the air and the formation of free liquids.

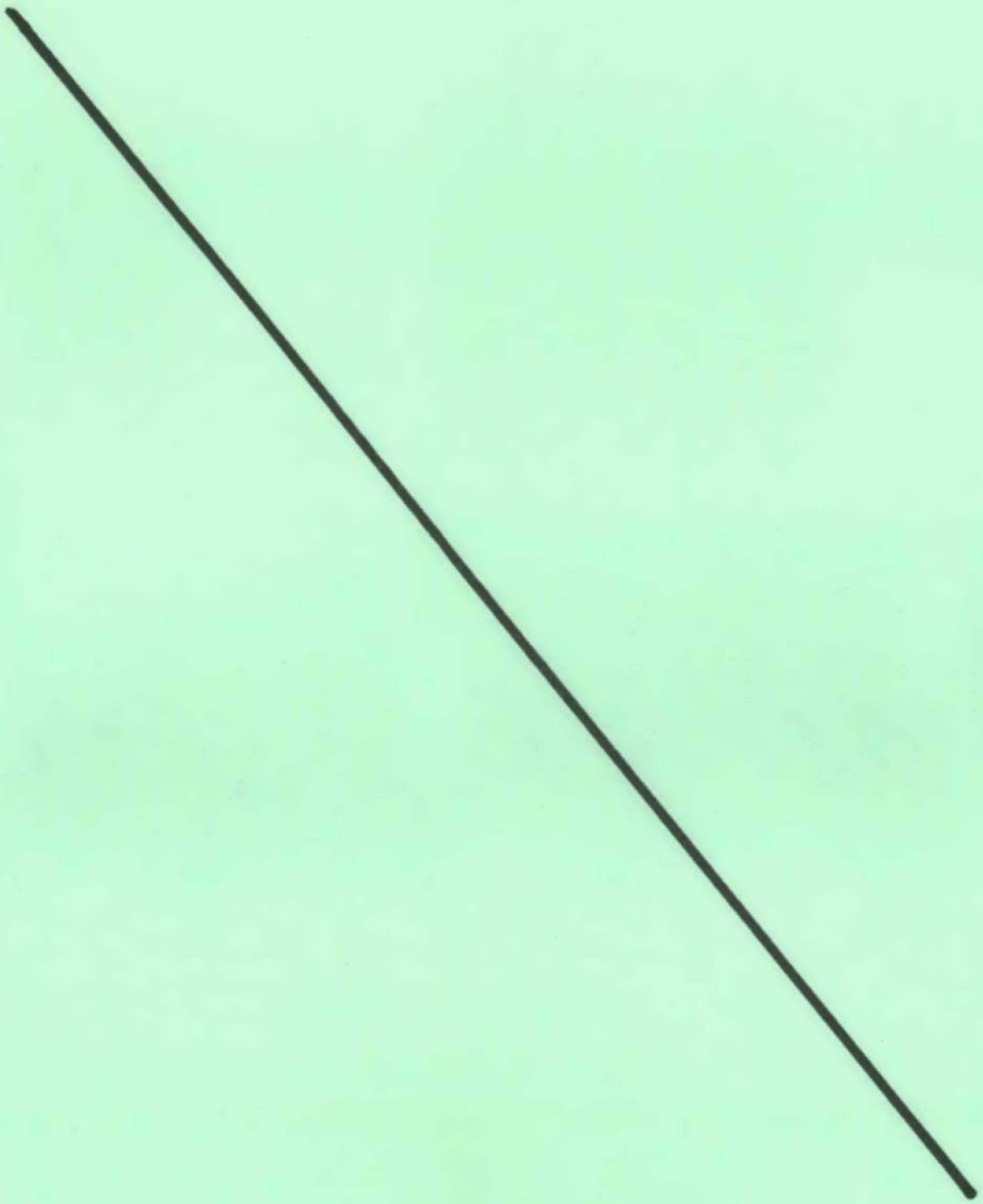
III.16.O.1.f The Permittees will place large boxes stored in the FSF in drip pans to ensure a base free of cracks or gaps, and ensure that the large boxes are elevated or otherwise protected from contact with accumulated liquids.

III.16.O.1.g Requirements for the Interim Storage Area

III.16.O.1.h The Permittee may store wastes in the ISA in standard metal containers (e.g., 208-liter drums), large metal boxes fabricated to accommodate the size and shape of a particular component or debris, or unique components removed from FFTF that when closed in accordance with WAC 173-303-630(5)(a) serve as a primary container.

III.16.O.1.i The Permittees will manage unique components stored in the ISA on the gravel surface with sufficient open space between components and between components and the fence line to accommodate inspections and movement of equipment.

III.16.O.1.j The Permittees will not place wastes in the open-sided structure (Building 432A) within the ISA identified in the Unit Description above.



WASHINGTON STATE DEPARTMENT OF ECOLOGY

Dangerous Waste Permit Application Part A Form

Date Received	Reviewed by:	Date: 09222008
Month Day Year	Approved by:	Date: 09222008
09192008		

I. This form is submitted to: (place an "X" in the appropriate box)

☒	Request modification to a final status permit (commonly called a "Part B" permit)
☐	Request a change under interim status
☐	Apply for a final status permit. This includes the application for the initial final status permit for a site or for a permit renewal (i.e., a new permit to replace an expiring permit).
☐	Establish interim status because of the wastes newly regulated on: (Date)
	List waste codes:

II. EPA/State ID Number

WA7890008967

III. Name of Facility

US Department of Energy – Hanford Facility

IV. Facility Location (Physical address not P.O. Box or Route Number)

A. Street

825 Jadwin

City or Town	State	ZIP Code
Richland	WA	99352

County Code (if known)	County Name
005	Benton

B. Land Type	C. Geographic Location Latitude (degrees, mins, secs)	Longitude (degrees, mins, secs)	D. Facility Existence Date Month Day Year
F	Refer to TOPO Map (Section XV.)		03 02 1943

V. Facility Mailing Address

Street or P.O. Box

P.O. Box 550

City or Town	State	ZIP Code
Richland	WA	99352

VI. Facility contact (Person to be contacted regarding waste activities at facility)

Name (last)	(first)
Brockman	David
Job Title	**Phone Number (area code and number)**
Manager	(509) 376-7395

Contact Address

Street or P.O. Box

P.O. Box 550

City or Town	State	ZIP Code
Richland	WA	99352

VII. Facility Operator Information

A. Name	Phone Number
Department of Energy Owner/Operator CH2M HILL Plateau Remediation Company Co-Operator for 400 Area Waste Management Unit*	(509) 376-7395 (509) 376-0556*

Street or P.O. Box

P.O. Box 550
P.O. Box 1600 *

City or Town	State	ZIP Code
Richland	WA	99352

B. Operator Type F

C. Does the name in VII.A reflect a proposed change in operator? ☐ Yes ☒ No Co-Operator* change

If yes, provide the scheduled date for the change: Month 10 Day 01 Year 2008

D. Is the name listed in VII.A. also the owner? If yes, skip to Section VIII.C. ☐ Yes ☒ No

VIII. Facility Owner Information

A. Name	Phone Number (area code and number)
David A. Brockman, Operator/Facility-Property Owner	(509) 376-7395

Street or P.O. Box

P.O. Box 550

City or Town	State	ZIP Code
Richland	WA	99352

B. Owner Type F

C. Does the name in VIII.A reflect a proposed change in owner? ☐ Yes ☒ No

If yes, provide the scheduled date for the change: Month Day Year

IX. NAICS Codes (5/6 digit codes)

A. First	B. Second
562211 Waste Treatment & Disposal	924110 Administration of Air & Water Resource & Solid Waste Management Programs
C. Third	**D. Fourth**
541715 Research & Development in the Physical, Engineering, & Life Sciences	

X. Other Environmental Permits (see instructions)

A. Permit Type	B. Permit Number	C. Description
E	AIR 06-1007	WAC 246-247, Radiation Protection - Air Emissions
E	AIR 10-4127	WAC 246-247, Radiation Protection - Air Emissions
E	UST 45-11	WAC 173-216, State Waste Discharge Permit Program

XI. Nature of Business (provide a brief description that includes both dangerous waste and non-dangerous waste areas and activities)

The Fast Flux Test Facility (FFTF) was a 400-megawatt (thermal) liquid-metal cooled (sodium) research and test reactor located in the 400 Area of the Hanford Facility. The FFTF developed and tested advanced fuels and material for the Liquid Metal Fast Breeder Reactor program. The FFTF was constructed in the late 1970's and first went critical on February 9, 1980. FFTF operated successfully from 1982 to 1992. The Department of Energy (DOE) issued a shutdown order in December 1993, and since that time, the DOE has been de-fueling the reactor and deactivating systems, as they were no longer needed. Mixed waste stored in the 400 Area Waste Management unit can include elemental sodium (Na), sodium potassium (NaK) (D001, D003, WSC2) and sodium hydroxide and potassium hydroxide (D002); as well as debris (for example piping, equipment, and components) contaminated with Na or NaK, sodium hydoxide, or potassium hydroxide. The mixed waste stored in the 400 Area Waste Management unit is limited to wastes generated from the 400 Area. Mixed waste will be stored in containers (for example drums and boxes) until treatment capabilities are available.

Greater-than 90-day Storage Areas:

Fuel Storage Facility (Building 403)

The Fuel Storage Facility (FSF) is a one-level reinforced concrete substructure covered by a steel frame metal-sided high bay building. Building dimensions are 34 x 27 x 12 meters (112 x 90 x 40) high. The principal equipment in the FSF is a belowground cell containing a carbon steel storage vessel approximately 6.4 meters (21 feet) in diameter and 7.3 meters (24 feet) deep for storing up to 466 FFTF spent fuel assemblies in liquid sodium. Adjacent buildings and below-grade cells contain the natural draft heat exchanger used to cool the FSF pool. With the exception of two areas, which are radiation areas (cells 907 and 906); all accessible areas are Radioactive Material Areas. The process design capacity for the FSF is 1,000 gallons.

Interim Storage Area

The 400 Area Interim Storage Area (ISA) consists of 156 x 75 meters (513 x 247 feet) totally fenced area with perimeter lighting that has been designated for above ground dry cask storage of spent fuel. A concrete pad, which measures 27 x 37 meters (90 x 120 Feet), was used for cask storage. The process design capacity for the ISA is 19,000 gallons.

EXAMPLE FOR COMPLETING ITEMS XII and XIII (shown in lines numbered X-1, X-2, and X-3 below): A facility has two storage tanks that hold 1200 gallons and 400 gallons respectively. There is also treatment in tanks at 20 gallons/hr. Finally, a one-quarter acre area that is two meters deep will undergo *in situ vitrification.*

Section XII. Process Codes and Design Capacities								Section XIII. Other Process Codes						
Line Number	A. Process Codes (enter code)		B. Process Design Capacity		C. Process Total Number of Units			Line Number	A. Process Codes (enter code)		B Process Design Capacity		C. Process Total Number of Units	D. Process Description
			1. Amount	2. Unit of Measure (enter code)							1. Amount	2. Unit of Measure (enter code)		
X	1	S	0	2	1,600	G	002	X	1	T	0	4	700	C	001	In situ vitrification

X	2	T	0	3	20	E	001											
X	3	T	0	4	700	C	001											
	1	S	0	1	20,000	G	003		1									
	2								2									
	3								3									
	4								4									
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2	2							2	2									
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2	4							2	4									
2	5							2	5									

XIV. Description of Dangerous Wastes

Example for completing this section: A facility will receive three non-listed wastes, then store and treat them on-site. Two wastes are corrosive only, with the facility receiving and storing the wastes in containers. There will be about 200 pounds per year of each of these two wastes, which will be neutralized in a tank. The other waste is corrosive and ignitable and will be neutralized then blended into hazardous waste fuel. There will be about 100 pounds per year of that waste, which will be received in bulk and put into tanks.

Line Number	A. Dangerous Waste No.	B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Processes (1) Process Codes	D. Processes (2) Process Description [If a code is not entered in D (1)]
X 1	D 0 0 2	400	P	S 0 1 T 0 1	
X 2	D 0 0 1	100	P	S 0 2 T 0 1	
X 3	D 0 0 2				Inc
1	D 0 0 1	30	T	S 0 1	Inc
2	D 0 0 2		T	S 0 1	Inc
3	D 0 0 3		T	S 0 1	Inc
4	W S C 2		T	S 0 1	Inc
5					
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19																
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25																

XV. Map

Attach to this application a topographic map of the area extending to at least one (1) mile beyond property boundaries. The map must show the outline of the facility; the location of each of its existing and proposed intake and discharge structures; each of its dangerous waste treatment, storage, recycling, or disposal units; and each well where fluids are injected underground. Include all springs, rivers, and other surface water bodies in this map area, plus drinking water wells listed in public records or otherwise known to the applicant within ¼ mile of the facility property boundary. The instructions provide additional information on meeting these requirements.

Topographic map is located in the Ecology Library

XVI. Facility Drawing

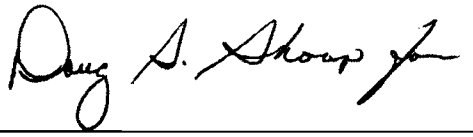
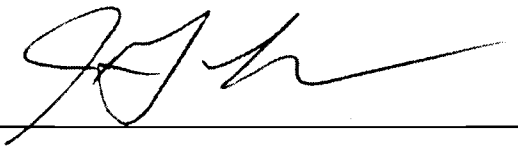
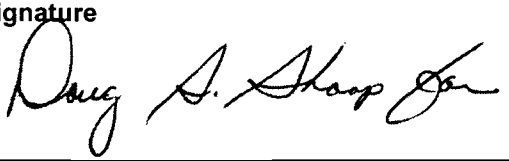
All existing facilities must include a scale drawing of the facility (refer to Instructions for more detail).

XVII. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, recycling, and disposal areas; and sites of future storage, treatment, recycling, or disposal areas (refer to Instructions for more detail).

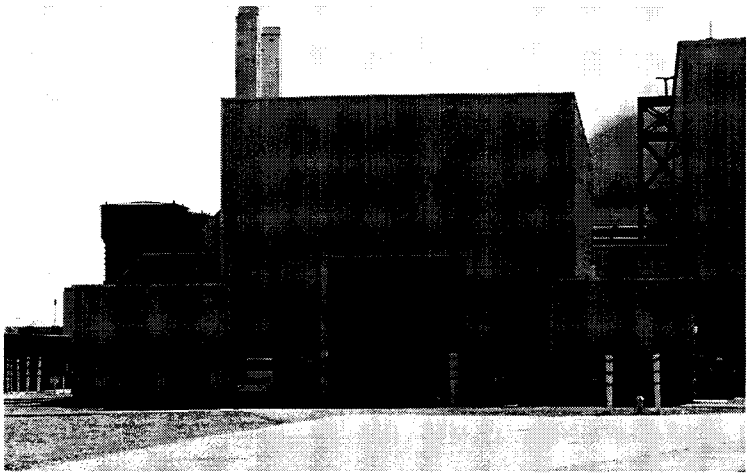
XVIII. Certifications

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Operator Name and Official Title (type or print) David A. Brockman, Manager U.S. Department of Energy Richland Operations Office	**Signature** 	**Date Signed** 9/19/08
Co-Operator* Name and Official Title (type or print) John G. Lehew, III President and Chief Executive Officer CH2M HILL Plateau Remediation Company	**Signature** 	**Date Signed** 9/2/08
Co-Operator – Address and Telephone Number* P.O. Box 1600 Richland, WA 99352 (509) 376-0556		
Facility-Property Owner Name and Official Title (type or print) David A. Brockman, Manager U.S. Department of Energy Richland Operations Office	**Signature** 	**Date Signed** 9/19/08

Comments

400 Area Waste Management Unit



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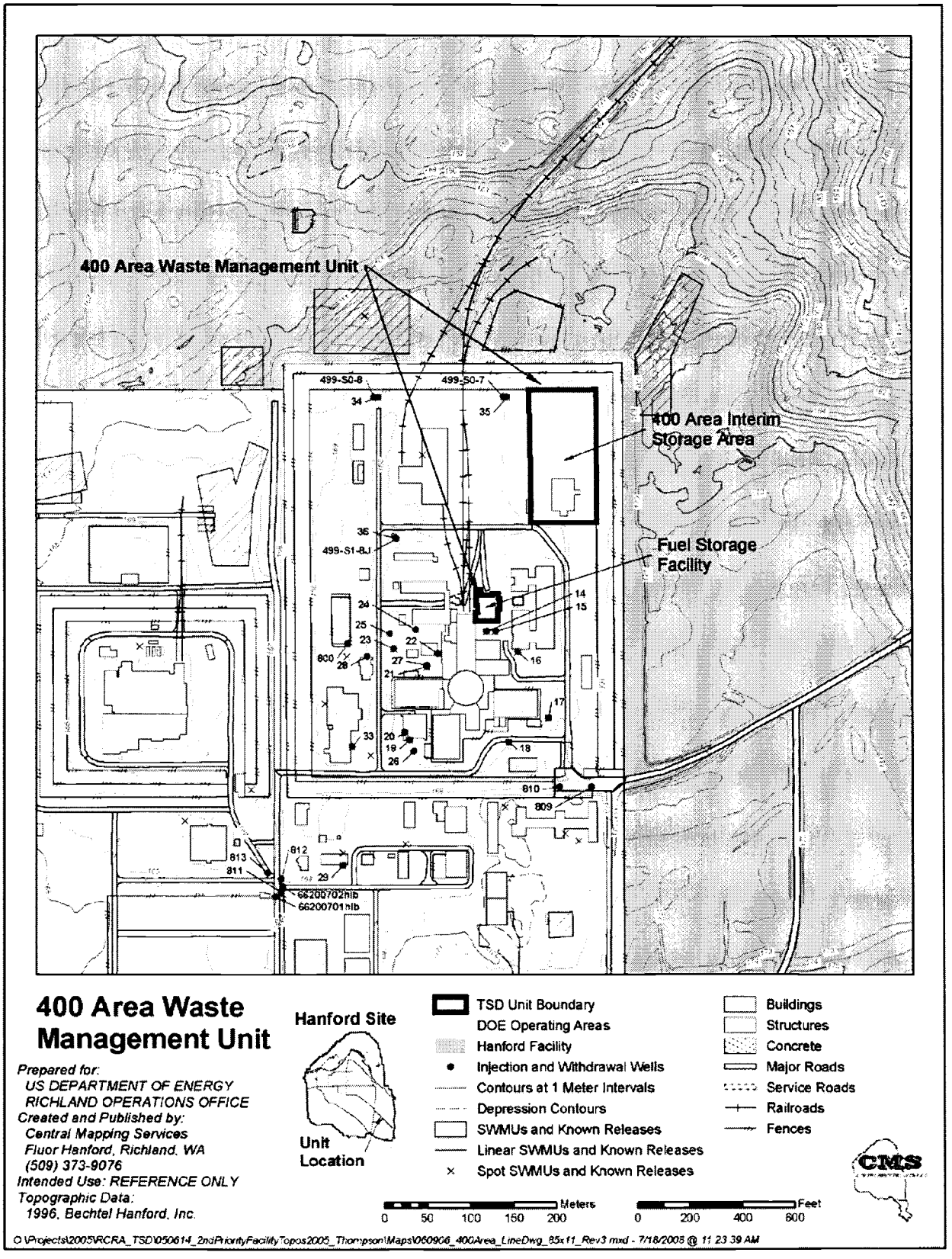
Building 403

Interim Storage Area (ISA) 8-2006
Building 4718


400 Area Waste Management Unit
400 Area Interim Storage Area
Fuel Storage Facility
499-S0-8
499-S0-7
499-S1-8J
66200702.hlb
66200701.hlb
400 Area Waste Management Unit
Prepared for:
US DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
Created and Published by:
Central Mapping Services
Fluor Hanford, Richland, WA
(509) 373-9076
Intended Use: REFERENCE ONLY
Topographic Data:
1996, Bechtel Hanford, Inc.
Hanford Site
Unit Location
TSD Unit Boundary
DOE Operating Areas
Hanford Facility
Injection and Withdrawal Wells
Contours at 1 Meter Intervals
Depression Contours
SWMUs and Known Releases
Linear SWMUs and Known Releases
Spot SWMUs and Known Releases
Buildings
Structures
Concrete
Major Roads
Service Roads
Railroads
Fences
Meters
0 50 100 150 200
Feet
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CMS
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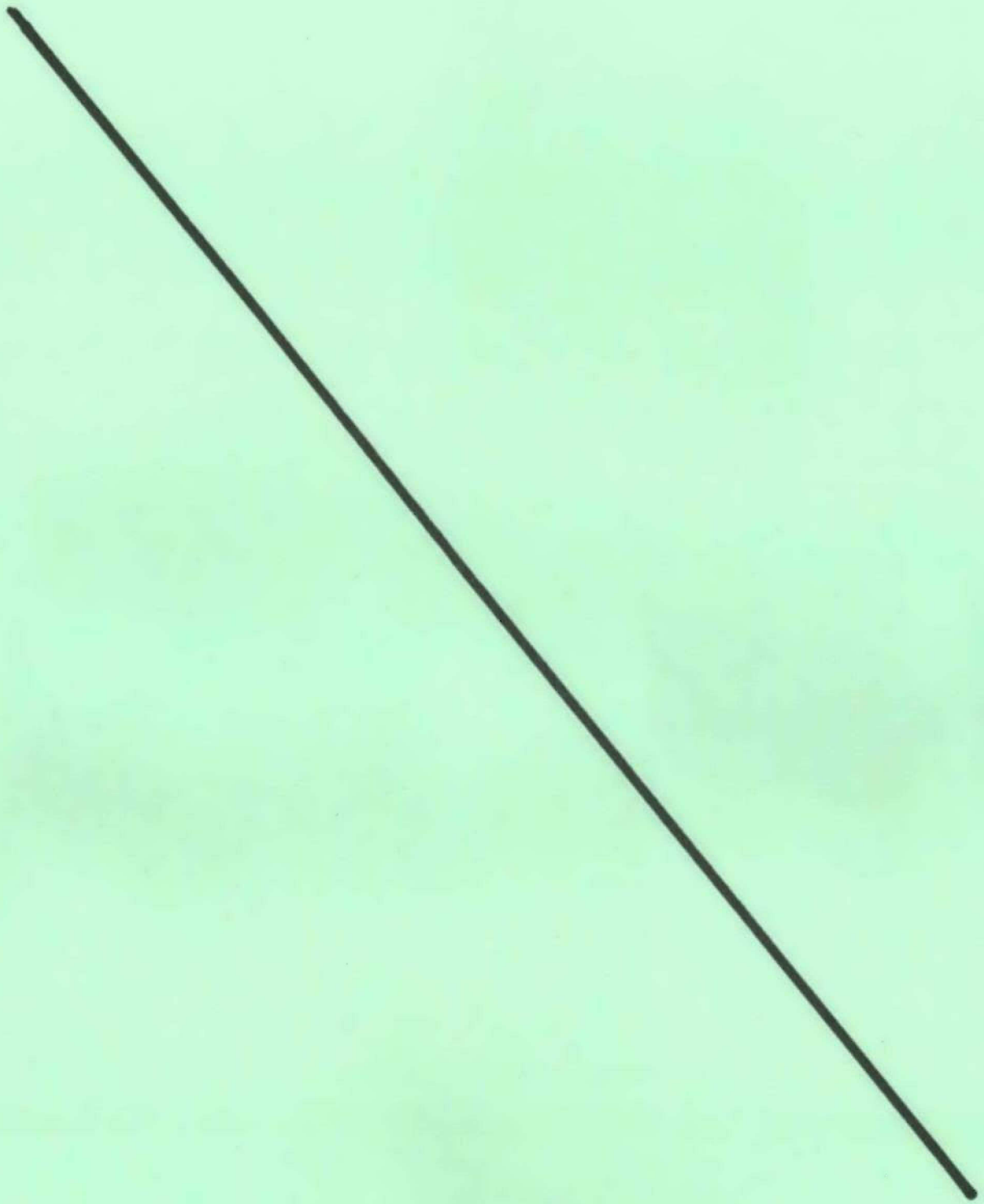

ADDENDUM B
WASTE ANALYSIS PLAN

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ADDENDUM B
WASTE ANALYSIS PLAN

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B. WASTE ANALYSIS PLAN

The purpose of this Waste Analysis Plan (WAP) is to document waste analysis activities associated with the 400 Area Waste Management Unit (WMU) to comply with WAC 173-303-300(1), (2), (4), and (5). WAC 173-303-300(3) and (6) are not applicable, as the 400 Area WMU will not receive waste from any offsite facilities. Mixed waste managed in the 400 Area WMU is limited to waste generated in the 400 Area. Descriptions required by WAC 173-303-300(5) are contained in the following sections.

B.1 Unit Description

The 400 Area WMU is a non-land based unit located in the 400 Area of the Hanford Facility and contains two container storage dangerous waste management units. The 400 Area WMU is operated in accordance with requirements in the Hanford Dangerous Waste permit established pursuant to the provision of WAC 173-303-630. The mission of the 400 Area WMU is to store mixed waste until it is treated. Treatment is not currently provided for mixed waste stored at the 400 Area WMU.

B.1.1 Description of Unit Processes and Activities

The 400 Area WMU includes the FSF (Building 403) and the ISA. The locations and boundaries of these two container storage units are documented in Figures C.1 and C.2 of Addendum C, and the topographic map in Addendum A.

Addendum A, Part A Form identifies waste quantities and the process design capacity for the 400 Area WMU. Sodium (Na) and sodium potassium (NaK) contamination is associated with the Na and NaK used as coolant in the FFTF reactor. The 400 Area WMU will continue to receive Na and NaK-contaminated waste and debris from decommissioning of the Fast Flux Test Facility (FFTF). In addition, sodium-contaminated waste, generated in association with former FFTF operations and currently in storage at other Hanford Facility locations, could be transferred to the 400 Area WMU for consolidation with other 400 Area-generated waste. Transfers of mixed waste to the 400 Area WMU will be conducted under Permit Condition II.Q.

B.1.2 Identification and Classification of Waste

Waste types not specifically identified in this Waste Analysis Plan are prohibited from storage in the 400 Area WMU dangerous waste management units. The waste can only exhibit the characteristics of ignitability, reactivity, and/or corrosivity.

Waste is designated using manufacturers' product information, Material Safety Data Sheets (MSDS), laboratory analysis provided by the generator, and/or reference material such as Registry of Toxic Effects of Chemical Substances (published by the National Institutes for Occupational Safety and Health). Addendum A, Part A Form, identifies dangerous waste numbers for waste types stored at the 400 Area WMU. These dangerous waste numbers and corresponding references are as follows:

Dangerous Waste Number (Characteristic)	Reference
D001 (ignitable)	WAC 173-303-090(5)
D002 (corrosive liquid)	WAC 173-303-090(6)
D003 (reactive)	WAC 173-303-090(7)
WSC2 (corrosive solid)	WAC 173-303-090(6)/104

B.2 Confirmation Process

The confirmation process is the process by which the 400 Area WMU staff will confirm their knowledge about a waste before it is placed into storage to ensure the waste is managed properly. The confirmation process includes completing appropriate pre-transfer reviews and verification steps as described in this section.

B.2.1 Pre-Transfer Review

Pre-transfer review takes place before waste can be placed in the 400 Area WMU. The review focuses on whether the analysis information (e.g., waste profile documentation) is sufficient to determine that the waste can be safely stored and that the waste was generated at the 400 Area. The pre-transfer review will be documented on a waste profile and maintained in the Hanford Facility Operating Record, 400 Area WMU File. The analysis must include data obtained by testing the waste and/or 'knowledge' of the waste (i.e., sufficient information about a waste to substitute reliably for direct testing of the waste). 'Knowledge' consists of existing published or documented analysis data on the waste or data from waste generated in similar processes, including but not limited to the following:

- MSDSs on chemical products
- Analytical data on the waste or a waste from a similar process
- Interview information
- Logbooks
- Procurement records
- Qualified analytical data
- Procedures and/or methods
- Process flow charts
- Inventory sheets
- Vendor information

B.2.2 Verification of Waste

Verification is an assessment performed at waste receipt to substantiate that the waste stream received at the 400 Area WMU is the same as represented by the analysis information and/or supporting documentation. Verification includes a container receipt inspection. Documentation to be reviewed as part of verification activities may include the container inventory documentation, a container listing report, and the waste profile documentation. For all Treatment, Storage, and Disposal (TSD) locations within the 400 Area WMU, each container or group of containers is inspected before acceptance by waste operations personnel for damage, proper closure, marking, and proper accompanying documentation.

B.2.3 Waste Acceptance

Acceptance of waste into the 400 Area WMU occurs only after the confirmation process (pre-transfer review and verification) is complete. Conformance issues identified during the confirmation process are documented and managed in accordance with Section B.2.4. Conformance issues that must be corrected before waste acceptance include:

- Waste that does not match approved waste profile documentation
- Designation discrepancy
- Packaging discrepancy

B.2.4 Conformance Issue Resolution

A conformance issue is any discrepancy identified during the confirmation process with waste profile documentation, a waste package, or a waste shipment. Discrepancies can be identified during pre-transfer review of a waste stream or during the verification process. If a possible conformance issue is identified, the following actions are taken by the 400 Area WMU staff to resolve the issue:

- Compile all information concerning the possible conformance issue(s).
- Gather additional knowledge that may assist in the resolution of the concern(s).
- Determine and implement the appropriate course of action to resolve the issue.

B.3 Selecting Waste Analysis Parameters

Na and NaK is the material of interest to support safe storage of the waste (including contaminated piping, appurtenances, and debris) at the 400 Area WMU. Na and NaK consists of un-reacted elements (either Na or a mixture of Na and K, respectively) (i.e., no other chemical contamination) as it was contained in closed-loop cooling systems throughout FFTF reactor operation. In addition, the ignitable and reactive properties of sodium and potassium metal are well known and documented (MSDSs and FFTF operating history), and the Na and NaK waste to be stored in the 400 Area WMU storage units is consistent with these properties. Analytical data exist for the Na and NaK contained in the FFTF cooling system, therefore, no further sampling and analyses of the sodium waste are planned.

Based on known chemical properties of sodium and a mixture of sodium and potassium metal, small amounts of concentrated sodium hydroxide and potassium hydroxide and trace amounts of hydrogen may be generated if the sodium comes in contact with water vapor in the air during storage. Due to the potential formation of sodium or potassium hydroxide having a pH greater than 12.5, debris contaminated with Na or NaK metal is designated as a corrosive (D002 and WSC2, corrosive liquid and solid, respectively). In the event that liquid is identified in Na or NaK waste secondary containment, the liquid will be managed under the generator provisions of WAC 173-303-200 and is beyond the scope of this WAP.

B.4 Selecting Sampling Processes

Additional analytical data are not required to store safely the Na or NaK-contaminated waste at the 400 Area WMU. Therefore, no additional waste sampling is planned.

B.5 Selecting a Laboratory, Laboratory Testing, and Analytical Methods

Additional analytical data are not required to store safely the sodium-contaminated waste at the 400 Area WMU. Therefore, there is no need to select a laboratory, laboratory testing methods, or analytical methods.

B.6 Selecting Waste Re-Evaluation Frequencies

Additional analytical data are not required to store safely the Na or NaK-contaminated waste at the 400 Area WMU. Therefore, there is no need to select a waste re-evaluation frequency.

B.7 Special Procedural Requirements

Provisions of WAC 173-303-300(5)(f) are not applicable. Additional analytical data are not required to store safely the sodium-contaminated waste at the 400 Area WMU. Therefore, no special procedural requirements for sampling and analysis apply.

The 400 Area WMU will not conduct any land disposal restrictions (LDR) treatment of waste in storage. Therefore, the LDR requirements applicable to the 400 Area WMU are limited to the record keeping requirements in WAC 173-303-380(1)(o) and LDR reporting requirements under the Hanford Federal Facility Agreement and Consent Order. Mixed waste stored in the 400 Area WMU will be treated in accordance with Permit Condition II.S.

B.8 Recordkeeping

Confirmation process records, will be maintained in accordance with Permit Condition II.I.1. These records will be maintained in the Hanford Facility Operating Record, 400 Area WMU File from the time the waste is received until a period of ten years following certification of closure.

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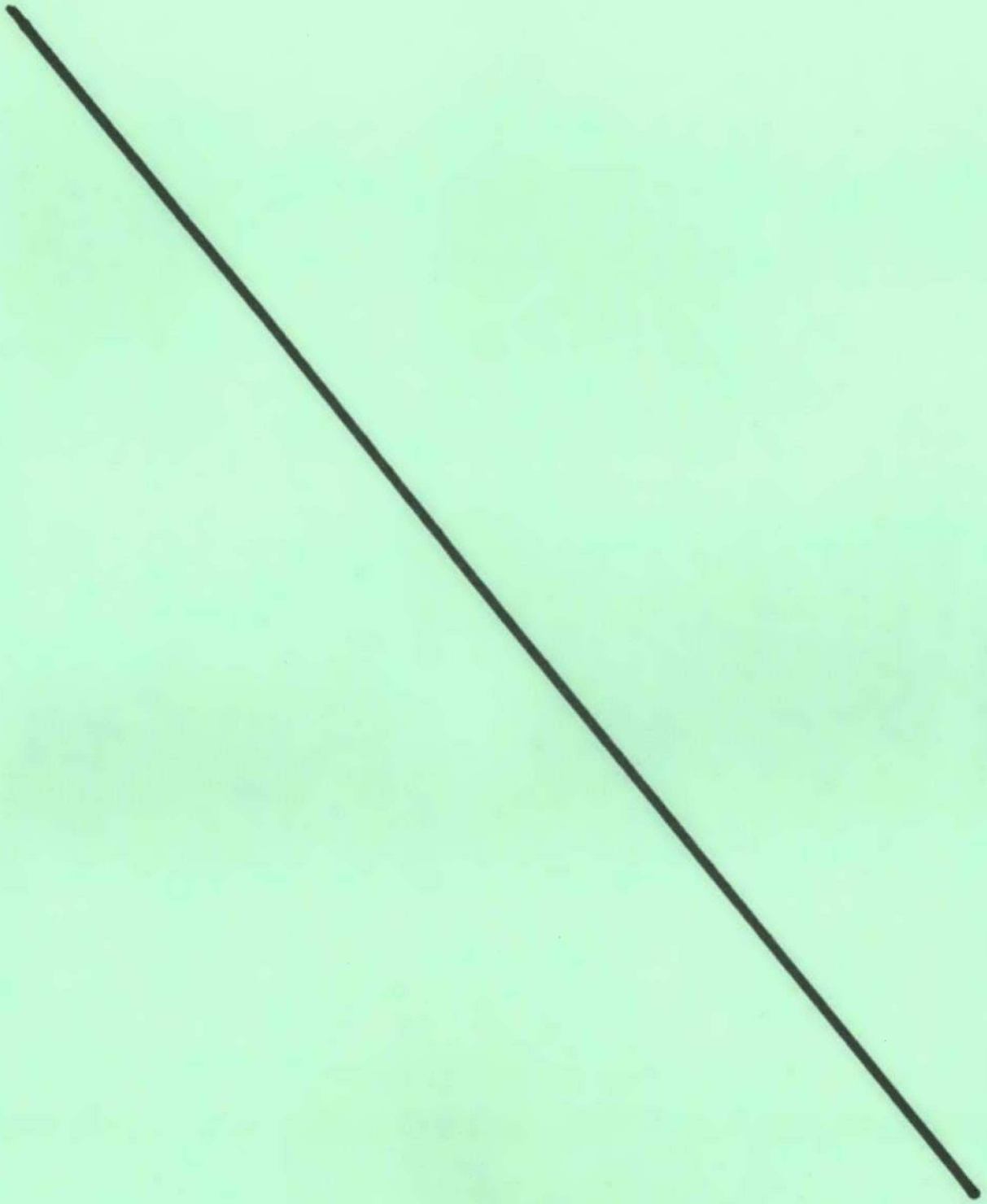

ADDENDUM C
PROCESS INFORMATION

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ADDENDUM C
PROCESS INFORMATION

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C. PROCESS INFORMATION

This Addendum discusses the processes used to store (Na) and sodium potassium (NaK)-contaminated waste at the 400 Area WMU. It includes a description of the containers used to store mixed waste at the two waste storage areas, the container management practices, the use of secondary containment systems, and special procedures related to ignitable, reactive, and incompatible wastes.

C.1 Containers

The following sections provide a description of 400 Area WMU waste containers, their management, their secondary containment, and removal of liquids from secondary containment systems.

C.1.1 Description of Containers

All mixed waste stored at the 400 Area WMU is packaged in containers. The specific size and type of container is dictated by the size, shape, or form of the waste. Containers generally consist of:

- Standard metal containers [e.g., 208-liter (55-gallon) drums]
- Large metal boxes [e.g., 1.2 meters by 1.2 meters by 2.4 meters (4 feet by 4 feet by 8 feet), 2.7 meters by 2.7 meters by 3.7 meters (9 feet by 9 feet by 12 feet), 4.9 meters by 2.7 meters by 2.9 meters (14.8 feet by 8 feet by 8.8 feet] fabricated to accommodate the size and shape of a particular component or piece of debris
- Unique components removed from Fast Flux Test Facilty (FFTF) that, when closed in accordance with WAC 173-303-630(5)(a), can serve as a primary container (e.g., large pumps, valves, tube bundles, cold traps).

Specific debris or components removed from FFTF may require the design and fabrication of additional boxes and, in some cases, containers smaller than 208-liter (55-gallon) may be appropriate for the waste type. The remainder of this Addendum describes storage of Na and NaK-contaminated waste in standard metal containers [e.g., 208-liter (55-gallon) drums], large metal boxes, and unique components. Metallic containers (either carbon steel or stainless steel) are compatible with Na and NaK for storage.

Na and NaK-contaminated waste stored at the 400 Area WMU is designated ignitable (D001) and reactive (D003) per WAC 173-303-090(7). In addition to D003, this waste may also exhibit the characteristics of corrosivity from generation of small quantities of sodium hydroxide or potassium hydroxide due to the reaction of waste residuals with atmospheric moisture. Therefore, waste managed in the FSF and the ISA are also designated as D002 (corrosive liquids) and WSC2 (corrosive solid).

The quantity of the NaK stored in the ISA is estimated to be 0.8 liters (28 fluid ounces). The NaK is contained within debris stored in the ISA containers.

The sodium in the Core Component Pots (CCPs) stored in the FSF have approximately 0.02 volume percent potassium due to the mixing of NaK into the Na. This small quantity would represent an impurity or trace amount and would not affect the chemical properties of the Na in the CCPs.

The 400 Area WMU consists of two container storage dangerous waste management units: the FSF (Building 403) and the ISA. The ISA is an outdoor storage area with a concrete pad and a gravel-surface pad. Refer to the map in Addendum A, Part A Form, and Figures C.1 and C.2 in this Addendum for locations of these storage sites within the FFTF PPA. A combined maximum of 75,686 liters (20,000 gallons, 1,000 gallons in the FSF and 19,000 gallons in the ISA) of the Na or NaK contaminant could potentially be stored in the two 400 Area WMU container storage units.

C.1.1.1 Description of Containers in the FSF (Building 403)

The CPPs, cylindrical containers previously used to hold assemblies and other components are stored in FSF (Building 403) in two large metal boxes. The box serves as the primary container for the residual sodium inside the CCPs.

Each CCP has been emptied of sodium to the extent practicable, but a maximum of 14 liters (3.7 gallons) of radiologically contaminated sodium remains in each CCP.

The volume of actual sodium in each box is estimated to be less than 757 liters (200 gallons). Each box lid is closed with an elastomer gasket and bolted flange closures. An inert gas (argon or nitrogen) cover is maintained on storage of each box to prevent contact of the metallic sodium with the water vapor in the air. Shielding is provided for worker protection and to meet as low as reasonably achievable (ALARA) requirements.

C.1.1.2 Description of Containers in the ISA

The ISA is an outdoor storage area, which includes a concrete pad and an additional area of open level ground. The three types of containers anticipated to be stored in the ISA are the standard metal containers, large metal boxes, and unique components described in Sections C.1.1.2.1 through C.1.1.2.3 respectively.

C.1.1.2.1 Storage of Standard Metal Containers in the ISA

The standard metal containers stored in the ISA are contained in container storage modules, specifically configured for the storage of reactive, ignitable, and corrosive waste. Each module is totally enclosed to protect the containers from the weather. The modules are placed directly onto the gravel pad and anchored by conventional methods (e.g., screw anchor or conventional dead man).

C.1.1.2.2 Storage of Large Metal Boxes in the ISA

Large metal boxes can be stored in the ISA. Waste placed in the large metal boxes will not be amenable for storage in standard metal containers, but does not require development of a unique package. Large metal boxes are commercially available and will be placed within secondary containment in the ISA.

C.1.1.2.3 Storage of Unique Components in the ISA

Unique components can be stored in the ISA. Unique components are anticipated to be removed as intact units, except for severed inlet and outlet piping. The inlets and outlets are closed as part of the removal process to prevent any residual Na or NaK inside the component from reacting with water vapor in the air to form sodium hydroxide and potassium hydroxide, respectively. Each component, once closed, serves as the primary container for the sodium waste residue on the interior surfaces of the component.

C.1.2 Container Management Practices

During the container receipt inspection, any discrepancies that have been noted are resolved in accordance with Addendum B, Waste Analysis Plan. Appropriate labels are applied to the containers before acceptance at any of the two waste storage locations in the 400 Area WMU to meet the requirements of WAC 173-303-630(3) and WAC 173-303-395(6). The container packaging and container handling are designed to maintain containment of the waste, maintain damage-free and contamination-free containers, limit storage intrusion, and limit human exposure to mixed waste.

The subsections below describe the container management practices for the FSF and the ISA.

C.1.2.1 Container Management Practices for the FSF

The FSF is a steel-framed, metal-sided, one-story building that is erected on a reinforced concrete substructure. It has no electrical service, lighting, ventilation, and water services. The reinforced concrete floor has a load rating of approximately 0.49 kilograms per square centimeter (1,000 pounds per square foot). The loaded weight of each storage container is approximately 8,256 kilograms (18,200 pounds), which provides a floor load factor of safety of approximately four (Figure C.1).

The drip pan is placed on the floor and the large metal box is placed onto the drip pan. A forklift/rigging packet is provided as an integral part of the base of each metal box. Lifting slings are also available on each box and the overhead bridge crane can be used to lift and position the box.

Sodium is stored at room temperature under an inert gas blanket to protect sodium from reaction with air.

Shielding is provided for worker protection and to meet ALARA requirements. Containers are inspected in accordance with Addendum I, Inspections Requirements for deterioration and leakage using a mirror to view the outer surfaces (sides and top) of the waste boxes. The aisle space requirements of WAC 173-303-630(5)(c) do not apply because there are only two containers. The waste is stored in a manner equivalent to WAC 173-303-630(5)(c) and the International Fire Code as interpreted by the Hanford Fire Department.

C.1.2.2 Container Management Practices for the ISA

The three types of containers identified in Section C.1.1 can be stored at the ISA. This dangerous waste management unit will be in compliance prior to use (Figure C.2). Management practices for these three container types are described in Sections C.1.2.2.1, C.1.2.2.2, and C.1.2.2.3.

C.1.2.2.1 Management of Standard Metal Containers in the ISA

The waste is stored in standard metal containers [e.g., 208-liter (55-gallon) drums], as described in Section C.1.1.2.1. Standard metal containers are placed into the container storage modules by means of a forklift or by manual placement depending on weight of the container and storage configuration.

Container storage modules in the ISA will be placed in a manner equivalent to the International Fire Code as interpreted by the Hanford Fire Department.

Standard metal containers placed into a container module can be stored four to a pallet, and multiple pallets will constitute a row of containers. Since only one row of pallets can be placed within the container storage modules, there are no aisles between rows, and therefore, the 30-inch aisle spacing requirement of WAC 173-303-630(5)(c) does not apply. Spacing between the pallets and the walls of the container storage module will be maintained to facilitate inspection and emergency response. Standard metal containers can be stacked two high within the container storage modules.

Standard metal containers managed in container storage modules are positioned so labels are visible for inspection. Receipt inspections of the containers are performed at the time the containers are loaded into the module according to Addendum B, Waste Analysis Plan. Standard metal containers in storage are visually inspected in accordance with Addendum I, Inspection Requirements.

C.1.2.2.2 Management of Large Metal Boxes in the ISA

The waste is stored in large metal boxes as described in Section C.1.1.2.2. Large metal boxes in the ISA are placed in a manner equivalent to the International Fire Code as interpreted by the Hanford Fire Department. Prior to placement of a large metal box in the ISA, a drip pan described in Section C.1.3.2 will be placed at the storage location. The large metal box serves as the primary container. The drip pan used for secondary containment of the large metal box is placed on the ground; the large metal box is placed in the drip pan, and elevated from the base of the drip pan. Each large metal box is handled and positioned in a manner to prevent rupture and container leakage.

Container receipt inspections of large metal boxes are performed at the storage location within the ISA. The large metal boxes in storage are visually inspected in accordance with Addendum I, Inspection Requirements.

C.1.2.2.3 Management of Unique Components in the ISA

Waste is stored as unique components as described in Section C.1.1.2.3. Unique components in the ISA will be placed in a manner equivalent to the International Fire Code as interpreted by the Hanford Fire Department.

Prior to placement of a unique component in the ISA, a drip pan described in Section C.1.3.2 will be placed at the storage location. The unique component serves as the primary container.

The drip pan used for secondary containment of the unique component is placed on the ground. The unique components are placed in the drip pans and elevated from the base of the drip pans. Each unique component is handled and positioned in a manner to prevent rupture and container leakage.

Container receipt inspections of unique components are performed at the storage location within the ISA. The unique components are visually inspected at least weekly while in storage (refer to Addendum I, Inspection Requirements).

C.1.2.3 Container Labeling

Containers are labeled and marked to meet the requirements of WAC 173-303-630(3) and WAC 173-303-395(6).

C.1.3 Secondary Containment Requirements for Storing Containers

The following sections describe secondary containment systems for the 400 Area WMU.

C.1.3.1 Secondary Containment System Design and Operation

The design of secondary containment systems varies depending on the particular dangerous waste management unit and the container type. Design, placement, and operation of each type of secondary containment system are discussed in Sections C.1.3.1.1 and C.1.3.1.2.

C.1.3.1.1 Secondary Containment System Design and Operations for the FSF

Secondary containment requirements in WAC 173-303-630(7) are met for the large metal boxes by placing the waste containers in drip pans. A forklift/rigging packet is provided as an integral part of the base of each metal box and results in elevation of the base of the box approximately 10.2 cm (four inches) above the drip pan keeping the base of the container from contacting any waste that could accumulate in the drip pan. The depth of the drip pan is approximately 8.9 centimeters (3.5 inches).

C.1.3.1.2 Secondary Containment System Design and Operations for the ISA

For each type of container stored within the ISA, secondary containment is provided compliant with WAC 173-303-630(7). The design can include provisions for indoor or outdoor storage. Indoor storage is provided for small metal containers managed in container storage modules. The container storage modules will be procured to be compliant with WAC 173-303-630(7). Outdoor storage is provided for large metal containers and unique components. A forklift/rigging packet is provided as an integral part of each secondary containment drip pan for outdoor storage. Outdoor containers are elevated in the drip pan keeping the base of the container from contacting any waste or liquids that could accumulate in the drip pan. Capacity will be designed on a case-by-case basis in accordance with Section C.1.3.2.

C.1.3.2 Secondary Containment System Capacity

Each secondary containment system is designed to provide a base underlying the boxes, containers, or components that is free of cracks or gaps and is sufficiently impervious (WAC 173-303-630(7)(a)(i)). For outdoor storage, the capacity of the containment (e.g., drip pan) will also meet the 25-year 24-hour storm value of 3.35 centimeters (1.32 inches) (WAC 173-303-630(7)(a)). In rare cases, when a container can contain free liquids, the drip pan will also be designed to meet the requirements of WAC 173-303-630(7)(a)(iii). Since sodium melts at 98 degrees C, an event causing liquid sodium to be released into the secondary containment is extremely unlikely. Although, NaK is typically liquid at ambient conditions, most if not all NaK will have been drained from contaminated debris and components. Spills or leaks of liquid NaK into secondary containment will be negligible and unlikely to pose any human health or environment threats. Since run-on is prevented as described in Section C.1.3.3, additional capacity is not required for run-on.

C.1.3.3 Control of Run-On

There is not a credible pathway, through which run-on can come into contact with the sodium-contaminated waste or enter the secondary containment for the waste containers. The contour of the ground and the 400 Area storm water drainage systems around the FSF and the ISA prevents run-on. Waste containers stored at the ISA are stored either on covered drip pans or in weather-tight storage modules. Run-on is prevented in either case.

Refer to Section C.1.4 for a discussion of response to accumulation of water from a known source (e.g., rainwater or snowmelt) in secondary containment.

C.1.4 Removal of Liquids from Secondary Containment System

In the unlikely event of liquid intrusion into the secondary containment system, the following is performed:

- Liquid in the secondary containment system is visually inspected for signs of other materials (e.g., dust, etc.).
- Containers affected are inspected for signs of damage. Damaged containers are repackaged and identified in the 400 Area WMU operating logbook.
- Previous inspection checklists are reviewed to identify any waste releases in the waste storage areas for which remedial actions have not been completed.
- Liquid removed from secondary containment is removed and characterized under the generator provisions of WAC 173-303-200 and is outside the scope of TSD unit operations.
- The 400 Area WMU supervisor signs the operating logbook indicating that the previous steps have been completed and that the secondary containment and/or storage structure(s) are clean.

Records of spills and releases of mixed waste are maintained as part of the 400 Area WMU operating record. For related records maintained elsewhere, both a description and the location of such records are entered into the operating record. These records include, but are not limited to, electronic and/or paper records. These records will be retained in accordance with Permit Condition I.E.10.c. These records will eventually be utilized during closure activities at the 400 Area WMU, as noted in Addendum H, Closure Plan. Additional actions taken in response to a spill or discharge are detailed in the Addendum J, Contingency Plan.

C.2 Prevention of Reaction of Ignitable, Reactive, and Incompatible Waste in Containers

Ignitable and reactive waste stored in containers is packaged and managed in the manner described in Sections C.1.1 and C.1.2. The waste stored in the 400 Area WMU is not incompatible with storage container materials of construction or other waste in the storage unit based on the waste codes and generating source documented in Addendum A, Part A Form.

C.2.1 Management of Reactive Waste in Containers

Wastes managed at the FSF and the ISA are designated as reactive solely with respect to the requirements of WAC 173-303-090(7)(a)(ii) and (iii). Management of these wastes as documented in this Addendum provide appropriate protection from contact with water and the risk of generation of potentially explosive hydrogen gas. The reactive designation for waste identified in the Addendum A, Part A Form, is not based on WAC 173-303-090(7)(a)(vi), (vii) or (viii), which address explosives and materials that can be detonated. Therefore, no specific management requirements are necessary with respect to the potential for explosion or detonation.

C.2.2 Management of Ignitable and Reactive Waste in Containers

Waste storage limits and spacing requirements are equivalent to those specified in the International Fire Code as interpreted by the Hanford Fire Department demonstrating compliance with the requirements of WAC 173-303-395(1).

A qualified staff member will inspect the areas storing mixed waste annually as specified in WAC 173-303-395(1)(d). This inspection will be performed in the presence of a professional person who is familiar with the International Fire Code.

C.2.3 Design of Areas to Manage Incompatible Wastes

Only waste as documented in Addendum B Waste Analysis Plan will be stored in the 400 Area WMU.

C.3 Air Emissions Control

Air emission requirements of WAC 173-303-690 through WAC 173-303-691 do not apply to mixed waste stored at the 400 Area WMU. The air emission standards of WAC 173-303-692 (Subpart CC) apply to tank, surface impoundment, and container storage units. However, since containers that are used solely for management of mixed waste are exempt, all containers in the FSF and the ISA are exempt from the requirements of WAC 173-303-692.

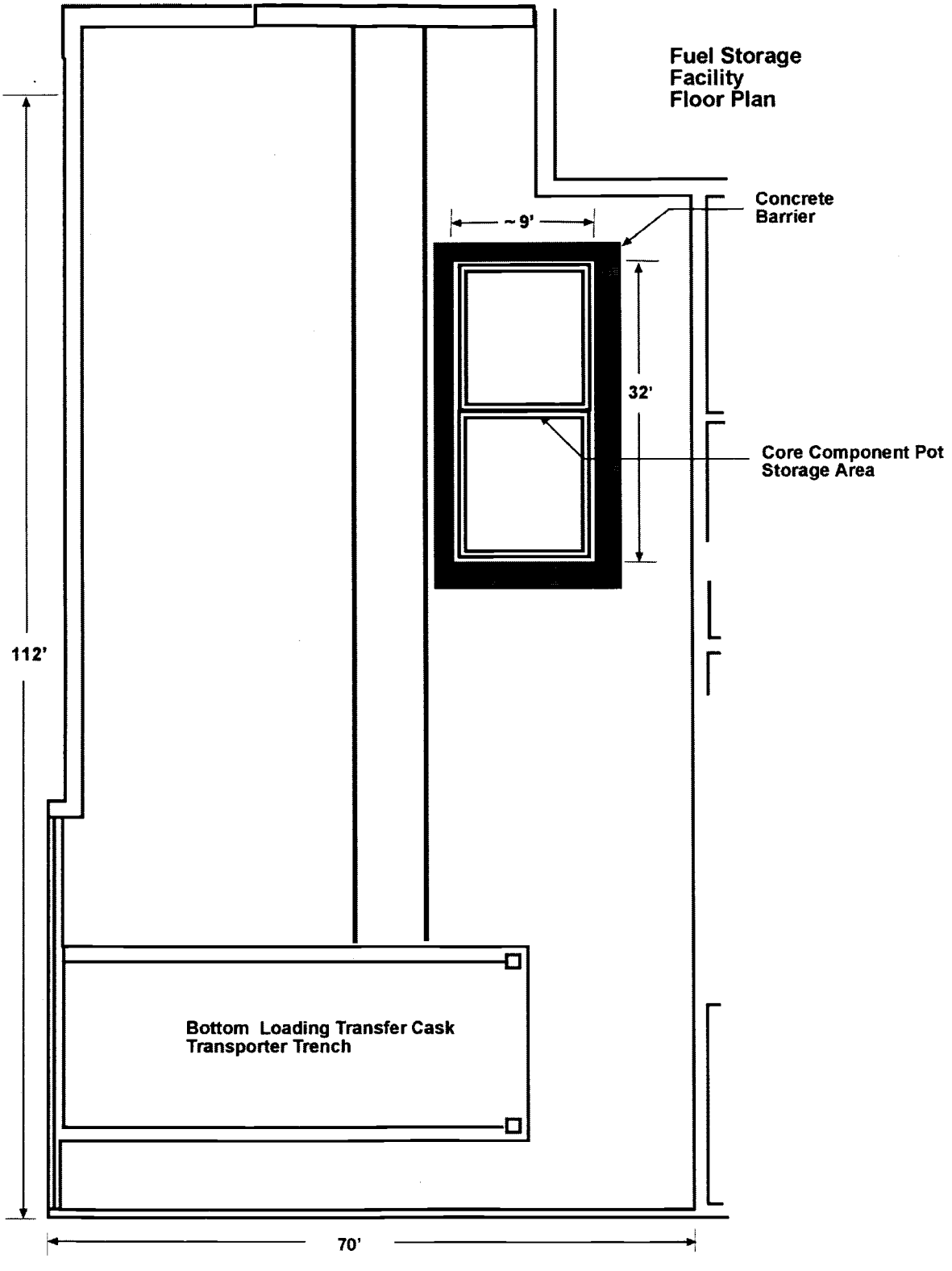

Figure C.1. Fuel Storage Facility

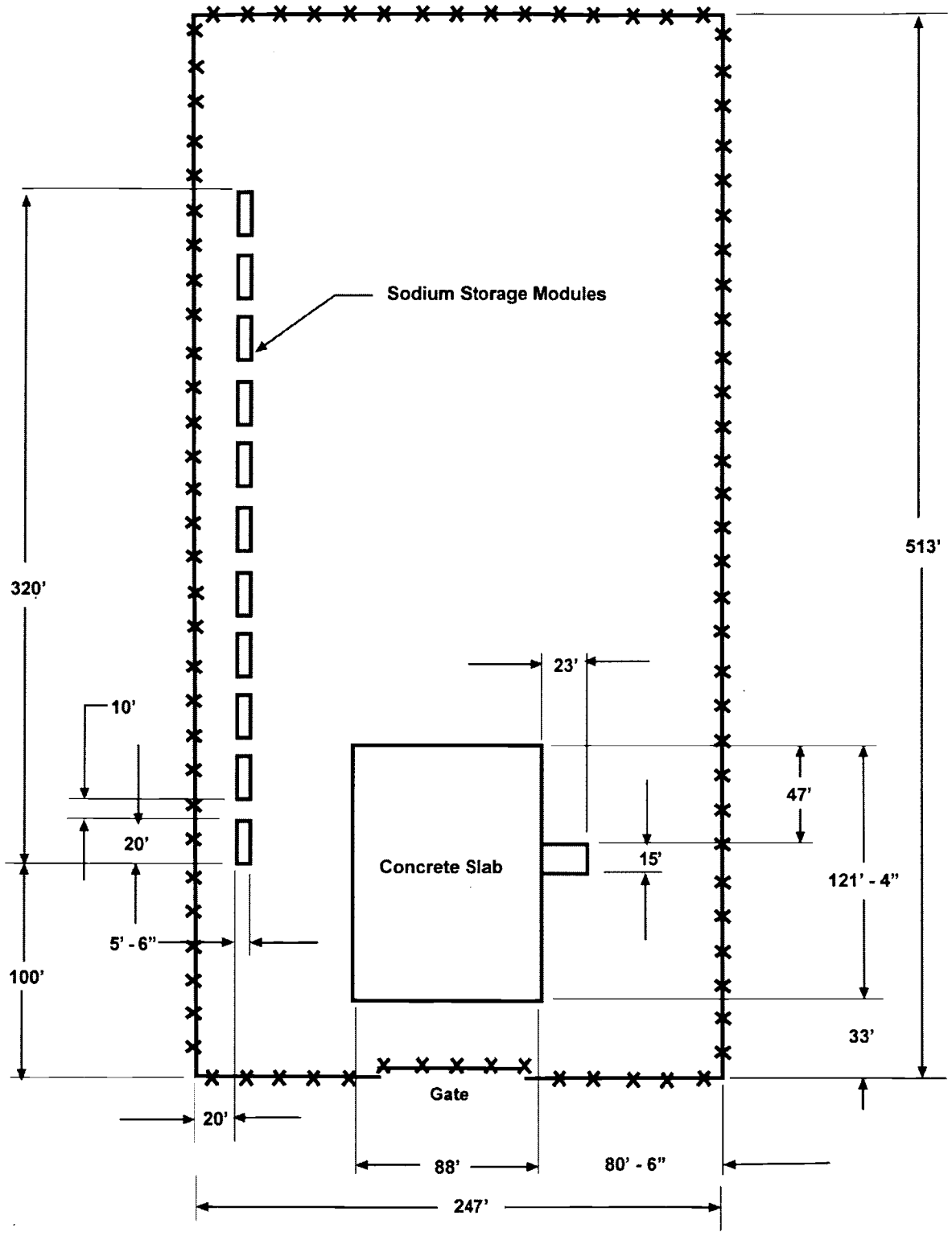

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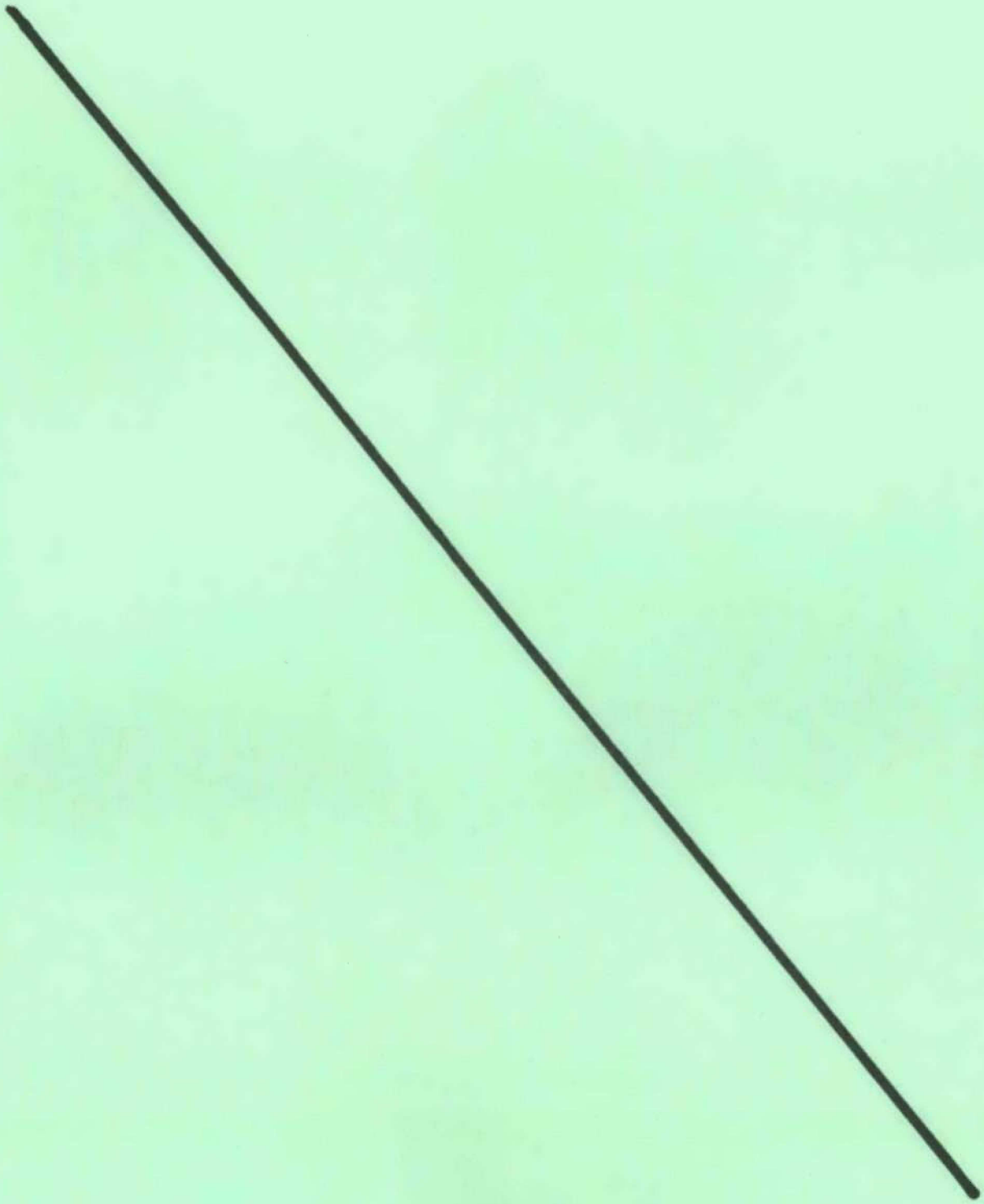
Figure C.2. Container Management Area



ADDENDUM E
PROCEDURES TO PREVENT HAZARDS

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PROCEDURES TO PREVENT HAZARDS

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E. PROCEDURES TO PREVENT HAZARDS

The 400 Area WMU is designed and operated to minimize exposure of the general public and operating personnel to waste. Shielding, control of toxic or dangerous material, safety and security procedures, and structures are used to keep exposure within as low as reasonably achievable (ALARA) requirements. In addition, the 400 Area WMU is designed to withstand accidents without undue risk to the health and safety of the general public and operating personnel.

E.1 Security Requirements

Refer to Permit Attachment 33, Section 6.1, Security.

E.1.1 Security Procedures and Equipment

The 400 Area WMU is located within the 400 Area property protection area (PPA) of the Hanford Facility and access is controlled by physical barriers, which complies with WAC 173-303-310(2)(c). Signs stating *Danger-Unauthorized Personnel Keep Out*, or equivalent language, legible at 7.6 meters (25 feet) or more, are posted near the entrance of each mixed waste storage area.

E.1.2 Waiver

Waiver of the security procedures and equipment requirements for the 400 Area WMU is not requested.

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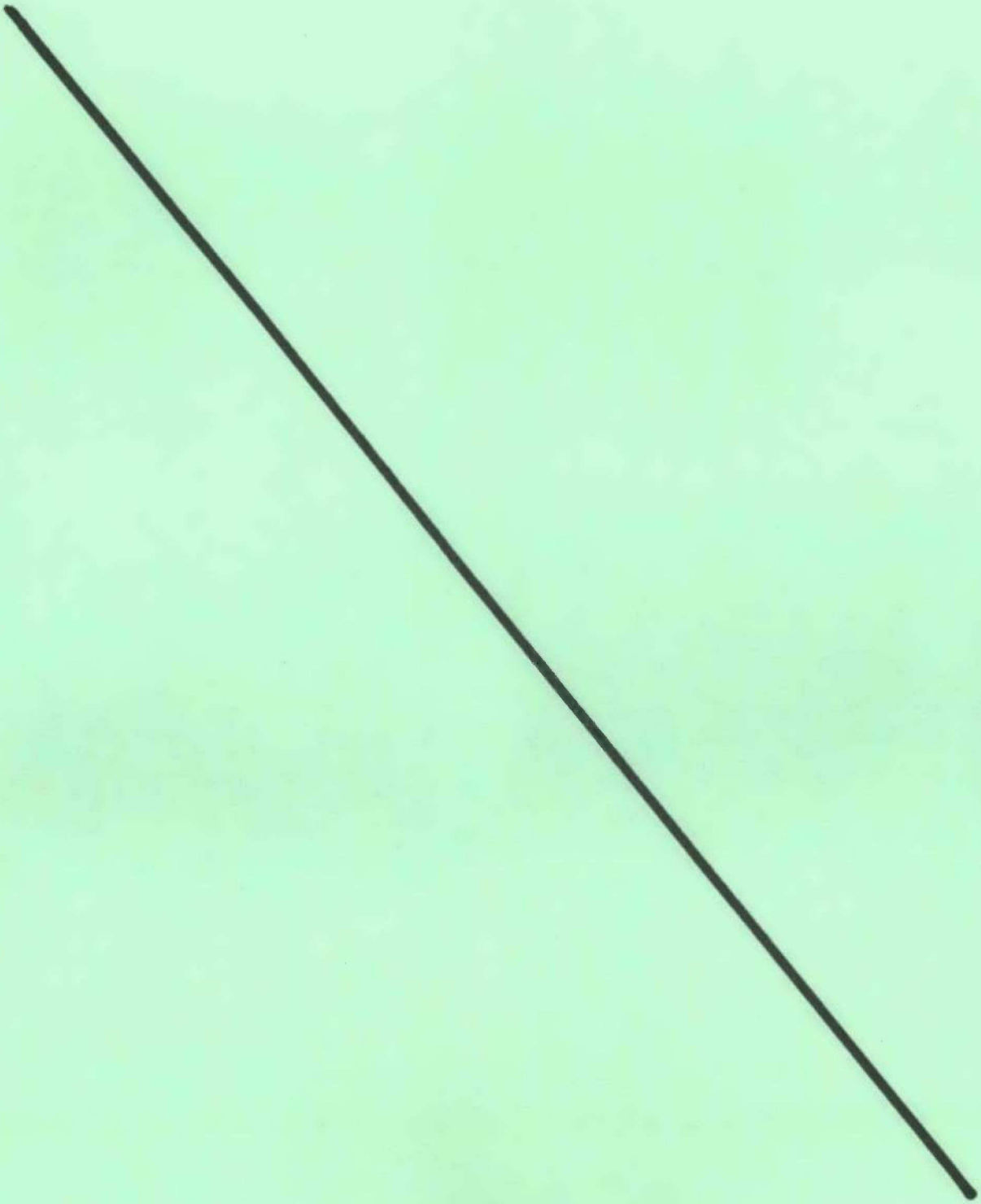

ADDENDUM F
PREPAREDNESS AND PREVENTION

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ADDENDUM F
PREPAREDNESS AND PREVENTION

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F PREPARDENESS AND PREVENTION

This Addendum discusses preparedness and prevention requirements; preventive procedures, structures, and equipment; and prevention of reaction of ignitable and reactive waste stored at 400 Area WMU.

The 400 Area WMU is designed and operated to minimize exposure of the general public and operating personnel to waste. Shielding, control of toxic or dangerous material, safety and security procedures, and structures are used to keep exposure within as low as reasonably achievable (ALARA) requirements. In addition, the 400 Area WMU is designed to withstand accidents without undue risk to the health and safety of the general public and operating personnel.

F.1 Preparedness and Prevention Requirements

The following sections document the preparedness and prevention measures taken at the 400 Area WMU.

F.1.1 Equipment Requirements

The following sections describe the internal and external communications systems and the emergency equipment required that could be activated by the 400 Area WMU Building Emergency Director. Hanford Facility-wide equipment is identified in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02).

F.1.1.1 Internal Communications

Groups or individuals working in any of the 400 Area WMU mixed waste storage areas communicate by two-way radio or cell phone. The S&M Operations Manager is the point of contact and all operations personnel with radios may function as a backup. The public address (PA) system is also available. The Hanford Patrol Operations Center (POC) is available by dialing 911. Cell phones should use 373-3800 to call the POC.

The ISA has no installed communication or alarm systems. The PA system can be heard throughout the 400 Area property protection area (PPA). A pressure alarm in the feed line for the inert gas to the CCP storage boxes in the FSF is wired to an alarm panel in Building 481A to alert the stationary operating engineer t in the event of low pressure.

F.1.1.2 External Communications

Personnel at the 400 Area WMU are equipped with devices for summoning emergency assistance from the Hanford Fire Department, the Hazardous Materials Response Team, and/or Hanford Patrol as necessary. External communication to summon emergency assistance is made via two-way portable radios or cell phones as described in Addendum J. The locations of the primary staging area are identified in Addendum J, Contingency Plan.

F.1.1.3 Emergency Equipment

The 400 Area WMU relies primarily on the Hanford Fire Department to respond to fires and other emergencies as described in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02). The Hanford Fire Department is capable of providing rapid response to fires within the 400 Area WMU.

A detailed list of emergency response equipment is included in Addendum J, Contingency Plan. Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) also contains the Hanford Facility wide equipment list. Fire extinguishers (Class D) are in the areas of the stored ignitable and/or reactive waste. Personnel are trained in the use of emergency equipment (Addendum G, Personnel Training).

F.1.1.4 Water for Fire Control

The only mixed waste stored in the 400 Area WMU consists of containerized reactive sodium metal as a residual contaminant on piping and components. Therefore, water will not be used to extinguish a fire associated with this waste stream.

Existing water fire suppressions systems have been physically disconnected in any case where sprinkled water could potentially contact the stored metallic sodium waste in the 400 Area WMU.

F.1.2 Aisle Space Requirement

A discussion on the applicability of aisle space is found in Addendum C, Process Information.

F.2 Preventive Procedures, Structures, and Equipment

The following sections describe preventive procedures, structures, and equipment.

F.2.1 Unloading Operations

Unloading requirements in WAC 173-303-395(4) do not apply to the 400 Area WMU because liquid dangerous waste will not be accepted into the Treatment, Storage, and Disposal (TSD) unit on a manifest shipment.

F.2.2 Run Off

The 400 Area storm water drainage system and appropriate grading prevent run-off.

F.2.3 Water Supplies

The discussion of water supplies in the context of the 400 Area WMU is not applicable, because water is not connected. Therefore, no potential for cross connection or back flow that could contaminate a water source exists.

F.2.4 Equipment and Power Failure

Loss of electrical power does not constitute an emergency situation regarding storage of mixed waste at the 400 Area WMU. The Fast Flux Test Facility (FFTF) is deactivated and in a long-term surveillance and maintenance mode. Therefore, the 400 Area WMU only has minimal electrical power is available. Indoor waste areas will not be occupied during power outages without adequate alternate substitutes for those systems except for personnel providing a fire watch or other emergency response activity.

As described in Section F.1.1.2, emergency communication equipment is available to summon emergency assistance in the event of a power loss.

F.2.5 Personnel Protection Equipment

Refer to Addendum J, Contingency Plan, for information regarding required personnel protection equipment available for use at 400 Area WMU.

F.3 Prevention of Reaction of Ignitable, Reactive, and/or Incompatible Waste

The following section describes prevention of reaction of ignitable, reactive, and/or incompatible waste.

F.3.1 Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Waste

All waste stored in the 400 Area WMU is stored in closed containers.

Activities involving heat generation (welding, cutting, open flames, hot surfaces, frictional heat, sparks, or radiant heat) are not allowed within the 400 Area WMU, without specific authorization by the S & M Operations Manager.

'NO SMOKING' signs are conspicuously placed wherever there is a hazard from ignitable or reactive waste.

The containerized waste (metallic sodium) is also water reactive. Precautions have been taken to ensure that water does not contact the waste. These precautions included removal of water fire suppression systems in the immediate area of waste containers, sealing the containers, and ensuring that outdoor container storage provides protection from precipitation and run-on.

WAC 173-303-630 requires managing ignitable and reactive waste containers in a manner equivalent to the International Fire Code. The Hanford Fire Department will determine whether the storage of ignitable and reactive waste meets the International Fire Code or equivalent.

F.3.2 Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste

Metallic sodium, in a solid form due to its high melting point (98°C), is the only waste stored at the 400 Area WMU. This waste is adhered to or contained in the interior of debris that has been generated from FFTF. This waste, which is a mixed waste, exhibits the characteristics of ignitability and reactivity due to the metallic sodium. It is also designated as a corrosive waste, as it may generate sodium hydroxide if it comes into contact with water vapor in the air.

There is no potential for mixing the metallic sodium waste with another waste that could result in an incompatible reaction, as the sodium waste is the only waste stored in the 400 Area WMU. The containers selected for storage of the waste are made of either carbon steel or stainless steel and are well suited to store the waste, even if small amounts of highly alkaline sodium hydroxide are generated inside the container. Either new containers are used or existing containers are thoroughly cleaned and dried before waste is placed in them.

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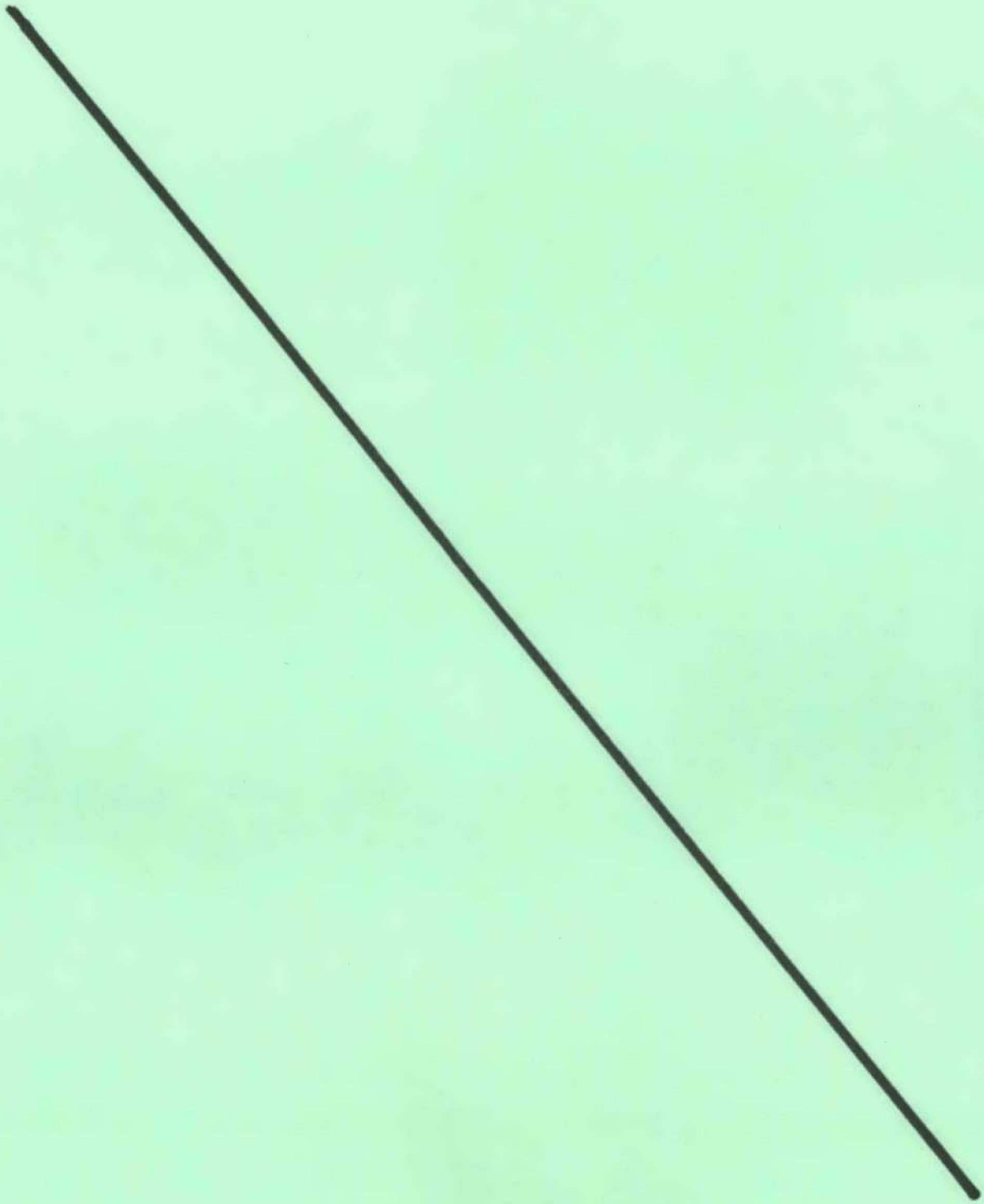

ADDENDUM G
PERSONNEL TRAINING

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ADDENDUM G
PERSONNEL TRAINING

400 Area Waste Management Unit Training Matrix

	Training Category*				
Permit Attachment 5, Training Category	**General Hanford Facility Training**	**Contingency Plan Training**	**Emergency Coordinator Training**	**Operations Training**	
400 Area WMU DWTP implementing plan	**Orientation Program**	**Emergency Response (Contingency Plan)**	**Emergency Coordinator Training**	**General Waste Management**	**Container Management**
Job title/position					
Nuclear Chemical Operator	X	X			X
D&D Worker	X	X			
Operations Manager	X	X			
Field Work Supervisor	X	X			
Environmental Compliance Officer	X			X	
Building Emergency Director	X		X		
Waste Service Provider	X			X	
Sampler	X			X	

*Refer to the 400 Area WMU Dangerous Waste Training Plan (DWTP) for a complete description.

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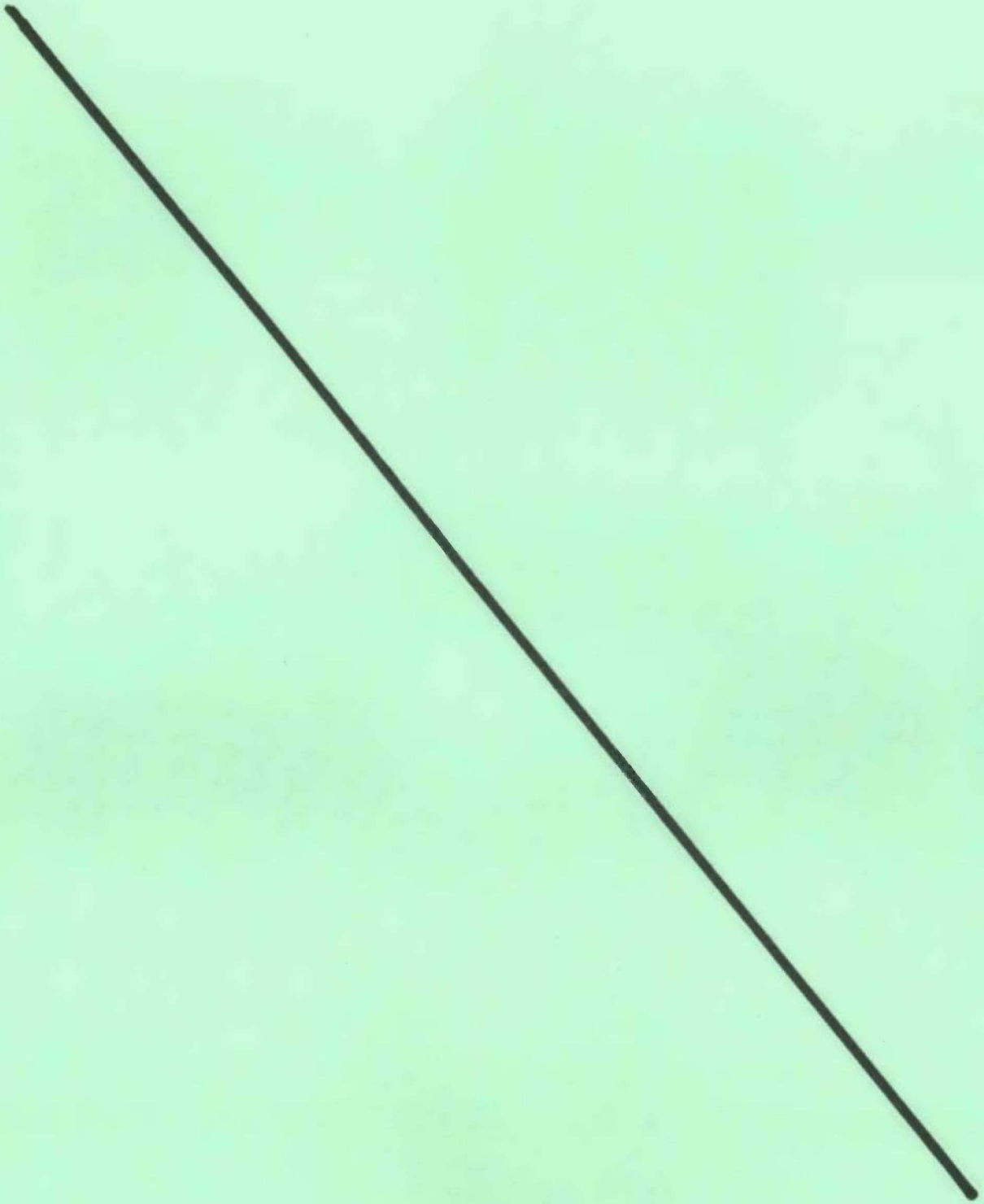

ADDENDUM H
CLOSURE PLAN

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CLOSURE PLAN

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H CLOSURE PLAN

The closure plan for the 400 Area WMU addresses closure of the two container storage units referred to as the Fuel Storage Facility (FSF) and the Interim Storage Area (ISA). This closure plan is based on closure by removal or decontamination, or "clean closure", and the general and unit-specific closure criteria in WAC 173-303-610(2) and WAC 173-303-630(10). All mixed waste will be removed from the FSF and ISA at the time of closure.

The following sections document the required closure performance standards and necessary closure activities to close the two container storage units at the 400 Area WMU.

H.1 Closure Performance Standard

The closure performance standard for the FSF and the ISA, based on "clean closure", are established for structures, equipment, bases, and liners under WAC 173-303-610(2)(b)(ii). Ecology may establish closure standards under this authority on a case-by-case basis. FSF and ISA will be considered clean when surfaces of structures, equipment, bases, liners, etc., meet the clean debris surface standard in 40 CFR 268.45, Table 1, Footnote 3. This standard requires that potentially contaminated surfaces when viewed without magnification shall be free of all visible contaminated soil and dangerous waste. Except the residual staining, from soil and waste consisting of light shadows, slight streaks, or minor discolorations, and soil and waste in cracks, crevices, and pits may be present provided such staining and waste, and soil in cracks, crevices, and pits shall be limited to no more than five percent of each square inch of surface area.

The clean closure standard will be achieved by documenting the absence of, or removing the mixed waste inventory. This includes all mixed waste and dangerous waste constituents from the 400 Area WMU. The operating practices used for waste management at the FSF and the ISA will identify and cleanup any spills or releases that may occur during operation of the units, and document in the Hanford Facility Operating Record, 400 Area WMU File the occurrence of a response to any spill or release. Cleanup of spills and releases from waste management operations will be consistent with the closure performance standard established in this plan, so that no additional cleanup or verification will be necessary at the time of closure. [WAC 173-303-610(2) and WAC 173-303-630(10)].

Contamination of soil, groundwater, surface water, or air related to operations at the FSF and ISA is not anticipated to be a concern at the time of closure. Therefore, the closure standards identified in WAC 173-303-610 (2)(b)(i) for soils, ground water, surface water, and air are not discussed at this time. However, in the unlikely event that soil contamination is found, this Closure Plan will be amended with an approved Permit modification and in accordance with WAC 173-303-610(3)(b) to incorporate soil closure performance standards.

H.2 Closure Activities

The 400 Area WMU is operated as a clean, well-maintained dangerous waste management unit. Detailed records are and will continue to be maintained of the materials and waste stored at the FSF and ISA, pursuant to Permit Condition III.16.B.2.c. Spills and other unusual occurrences are responded to and documented pursuant to Section H.1. Clean closure of the 400 Area WMU container storage units will demonstrate that the storage areas are not contaminated with mixed waste or dangerous waste constituents. Contamination from the FSF and ISA operations is not expected to be present at the time of closure, since the permit condition governing dangerous waste management activities require that any spills or releases be promptly identified and cleaned up to a performance standard equivalent to the clean closure performance standard established in this closure plan. Therefore, no decontamination is expected to be necessary at the time of closure, no sampling is planned in support of clean closure, and no other closure activities are anticipated.

If evaluation of documentation such as spill records, field observations, and personnel interviews indicate the likelihood of waste contamination that was not previously cleaned up, or that the results of past spill cleanup cannot be verified, this Closure Plan will be amended with an approved Permit modification and in accordance with Permit Condition II.J.3. Any unanticipated decontamination activities, sampling and analysis activities, or other activities required for clean closure will be accomplished in accordance with the amended Closure Plan. The Closure Plan will contain the necessary provisions at the time of closure.

At a minimum, closure activities will accomplish the following.

- Remove stored waste inventory and transfer to a permitted on-site dangerous waste management unit, or to an off-site facility meeting the definition of a "designated facility" in WAC 173-303-040, incorporated by reference, as appropriate.
- Perform document review and interview personnel to determine spill history and ensure spills were completely cleaned up consistent with closure performance standards for the FSF and ISA.
- Verify that performance standard has been achieved.
- Obtain certification described in Section H.5 upon performance standard verification.
- Prepare a Permit modification in accordance with Permit Condition II.J.3 to amend the Closure Plan and include the additional work requirements necessary to achieve clean closure upon an initial finding that the performance standard(s) was not achieved.

Detailed information for the closure activities are provided as follows.

H.2.1 Remove Waste Inventory

All containers of waste will be removed from each container storage dangerous waste management unit. If the containers are removed from the FSF to the ISA to close the FSF in advance of the ISA, a waste transfer to consolidate wastes in the ISA will be accomplished without the need for specialized equipment. Waste transfers will be in compliance with WAC 173-303-380(1)(b).

If the containers require transportation from the FSF or the ISA to another on-site dangerous waste management unit or off-site Treatment, Storage, and Disposal (TSD) Facility, special transportation containment will be designed and fabricated for the waste stored in the FSF. For waste stored in the ISA, specialized transportation containment and/or packaging will be determined on a case-by-case basis. In addition, the receiving on-site dangerous waste management unit or off-site TSD Facility may require time to modify documents in order to receive the containers of waste.

No waste treatment capacity is currently available for the inventory of wastes expected to be managed at the FSF or the ISA. No waste is expected to be generated during closure activities following removal of the waste inventory. This closure plan will be amended in accordance with Permit Condition II.J.3 in the event that waste will be generated.

If the ISA never managed any waste at the time of closure, the inspection/survey below will document that condition.

H.2.2 Perform Document Review and Interview Personnel to Determine Spill History

Because the 400 Area WMU is and will continue to be a well operated dangerous waste management unit, the Hanford Facility Operating Record, 400 Area WMU File will contain documentation of how any spills were properly cleaned up. Proper cleanup of spills will be determined by demonstrating any residuals from the spills have been removed. The Hanford Facility Operating Record, 400 Area WMU File will show how the spill was cleaned up. A visual performance standard will allow for clean closure of structures, equipment, bases, liners, etc. The spill cleanup records in the Hanford Facility Operating Record, 400 Area WMU File will become a basis to support clean closure of the ISA gravel areas without the need for sampling. If review of the Hanford Facility Operating Record, 400 Area WMU File reveals a problem, the Closure Plan will be amended to include the necessary steps to satisfy the closure performance standard.

H.2.3 Verify Performance Standard Achievement

After all waste has been removed from a container storage dangerous waste management unit(s) and the document review has been completed, a visual inspection/survey will be performed on any structures, equipment, bases, liners, etc, to verify that the surface meets the clean debris surface in 40 CFR 268.45 Table 1, Footnote 3, incorporated by reference. The inspection/survey will evaluate all surfaces, with special emphasis on information derived from evaluation of the operation records, logbooks, and personnel interviews.

If no spills occurred in the gravel area of the ISA, the visual inspection/survey will document that "no spills occurred". If there was a spill in the gravel area, and a document review shows that the spill was properly and completely cleaned up, a visual inspection/survey will document the review finding(s). If information indicates from evaluation of the operation records, logbooks, and personnel interviews that contamination is possible from TSD unit activities, this Closure Plan will be amended with an approved Permit modification in accordance with Permit Condition II.J.3, to incorporate the steps and requirements to achieve clean closure.

Once the inspection/survey is complete and results verify clean closure achievement, the certification described in Section H.5 will be obtained.

H.2.4 Decontaminate or Remove Equipment

No decontamination or equipment removal is expected to be required to achieve clean closure. In the event a problem occurs where decontamination or equipment removal is necessary, a Permit modification will be prepared to amend the closure plan in accordance with Permit Condition II.J.3.

H.2.5 Decontaminate Structures

No structures will require decontamination to achieve clean closure. In the event a problem occurs where structures will require decontamination, a Permit modification will be prepared to amend the closure plan in accordance with Permit Condition II.J.3.

H.2.6 Remediate Soils

Soil remediation activities are not expected to be necessary as the FSF and ISA are anticipated to be well maintained. Any spills occurring during the operating life of the FSF and ISA are expected to have been properly and completely cleaned up to standards consistent with the closure performance standards. In the event that sampling is necessary for the surrounding gravel areas of the ISA, the Closure Plan will be amended through a Permit modification in accordance with Permit Condition II.J.3.

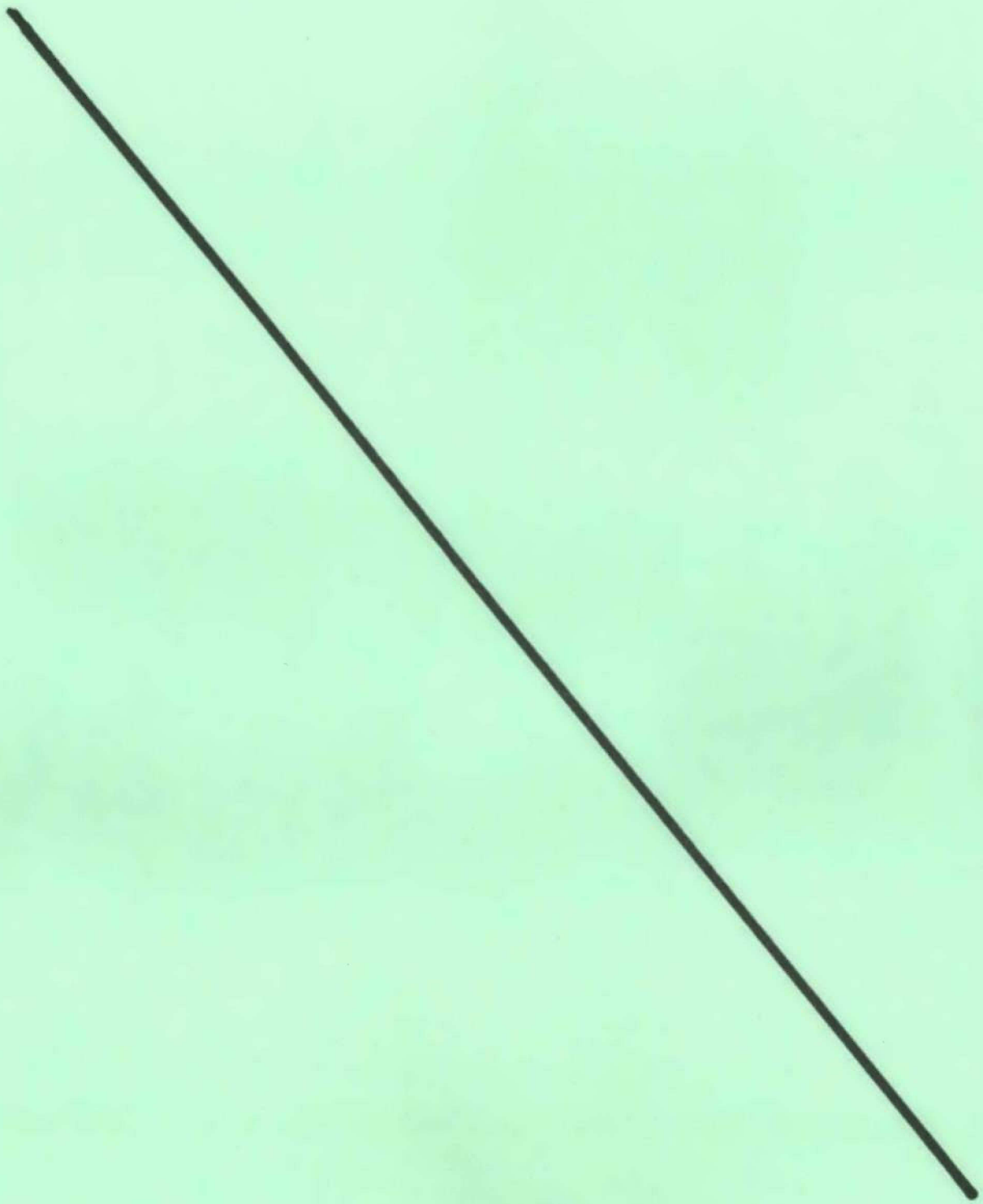
H.3 Maximum Extent of Operation and Maximum Waste Inventory

As authorized by Permit Condition III.16.B.1, the FSF and ISA provide storage capacity for waste generated from decommissioning of the Fast Flux Test Facility (FFTF) before final treatment and/or disposal. The estimated maximum waste inventory is consistent with the combined storage capacity of the FSF and the ISA, or 20,000 gallons.

H.4 Schedule for Closure

In accordance with WAC 173-303-610(3)(c), notification to Ecology is required at least 45 days prior to the start of closure of the FSF or the ISA.

The closure schedule is based on the time required to perform applicable closure activities described in Section H.2. Closure of the FSF and the ISA will be completed 180 days after the start of closure activities at each unit, respectively. When a closure date is established for a container storage dangerous waste management unit(s), the schedule will be evaluated, including any additional closure activities required for clean closure. If Closure Plan modifications are necessary to achieve clean closure, a revised schedule will be proposed as part of the Permit modification package prepared in accordance with Permit Condition II.J.2.



ADDENDUM I
INSPECTION REQUIREMENTS

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ADDENDUM I
INSPECTION REQUIREMENTS

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I. INSPECTION REQUIREMENTS

This section describes the method and schedule for inspection of the 400 Area WMU. The purpose of the inspections are to prevent malfunctions and deterioration, operating errors, discharges, identify leaking containers, improperly stored containers, and degradation of containment and safety equipment and/or systems (e.g., inert gas pressure in feed line). These inspections help to ensure that situations do not exist that might cause or lead to the release of waste to the environment or that might pose a threat to human health. Abnormal conditions identified by inspections are corrected in accordance with WAC 173-303-320(3).

I.1 General Inspection Requirements

The content and frequency of inspections are described in this section. Inspections, implemented through operating requirements, are documented on inspection checklists and log sheets. Inspection records are maintained in accordance with Permit Condition II.I.1, and contain the following information:

- Date and time of inspection.
- Printed name and the handwritten signature of the inspector.
- Notation of the observations made.
- Date and nature of any repairs or remedial actions taken.

The inspection checklists consist of a listing of items that are to be assessed during each inspection. For each item listed, a yes/no response is made. A 'yes' response means that the item complies with the conditions stated on the checklist. Any problems identified during the inspection, as indicated by a 'no' response on the checklist, are reported to the S & M Operations Manager.

I.1.1 Types of Inspections

A qualified person performs an inspection of the active 400 Area WMU storage areas and containers for any signs of malfunctions, deterioration, discharges, and other anomalies. Specific items and/or problems to be noted during weekly inspections include the following:

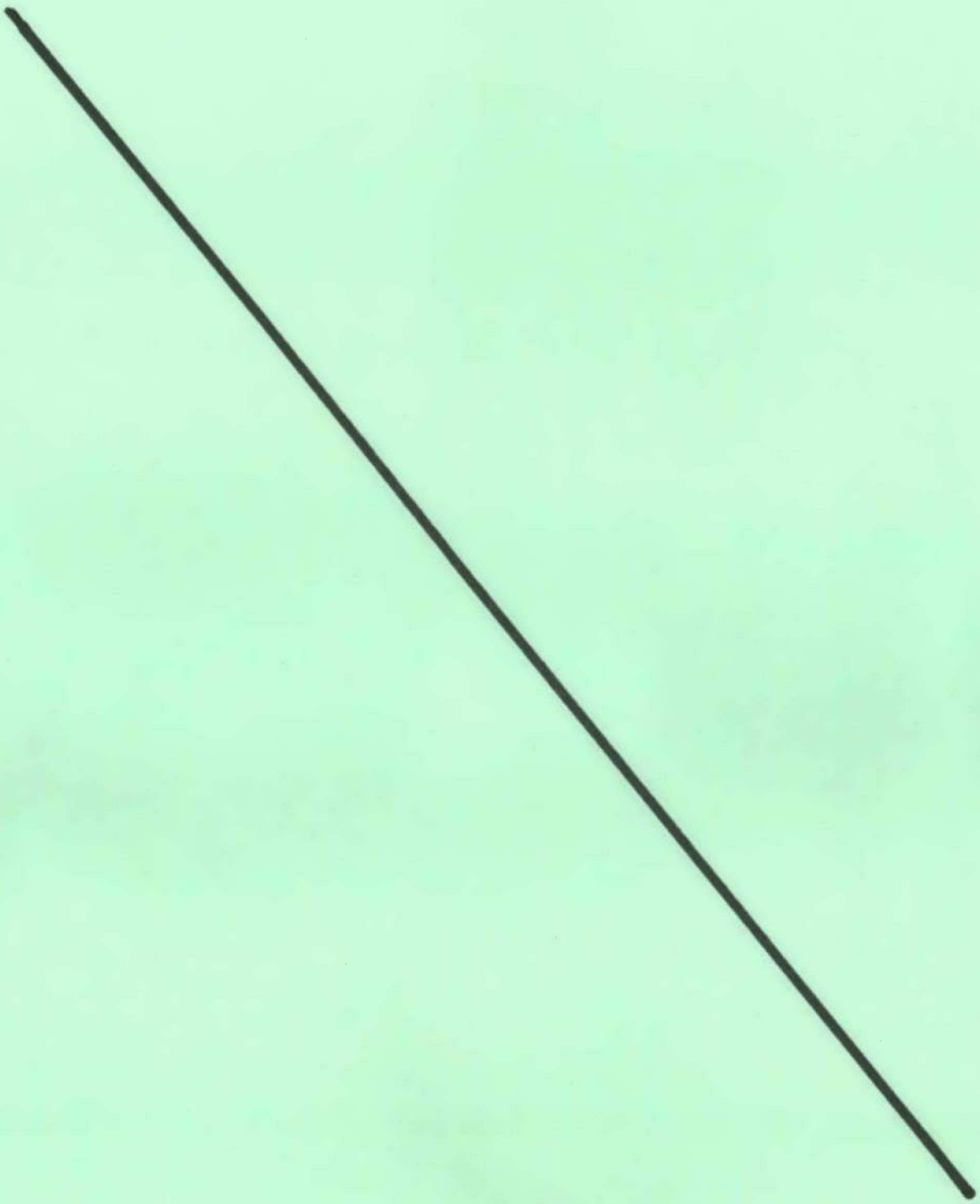
- Condition of concrete floor, curbing, and walls in the FSF
- Container structural integrity
- Containers closed
- Inert gas pressure in feed line to CCP boxes in the FSF
- Significant corrosion of containers
- Evidence of spills or leaks
- Accumulated liquids
- Container labels and markings in place, legible, and un-obscured
- Moisture in modules including condensation in the ISA storage modules

Monthly personnel will conduct inspections of safety equipment. Testing of the equipment will be completed as necessary. These inspections and tests include portable fire extinguishers, portable emergency response kit, and spill kit. For addition information, refer to Table I.1, Inspection Schedule.

I.1.2 Frequency of Inspections

The following inspection frequencies exist (refer to Table I.1):

- Weekly container inspections
- Monthly, fire extinguishers, emergency response kit, and spill kit



ADDENDUM J
CONTINGENCY PLAN

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CONTINGENCY PLAN

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J CONTINGENCY PLAN

The requirements for a contingency plan at the 400 Area WMU are satisfied in the following documents: Portions of the Hanford Facility RCRA Permit (Permit) Attachment 4 *Hanford Emergency Management Plan* (DOE/RL-94-02) and this section.

The unit-specific building emergency plan also serves to satisfy a broad range of other requirements [e.g., Occupational Safety and Health Administration standards (29 CFR 1910), *Toxic Substances Control Act of 1976* (40 CFR 761), and U.S. Department of Energy Orders]. Therefore, revisions made to portions of this unit-specific building emergency plan that are not governed by the requirements of WAC 173-303 will not be considered as a modification subject to WAC 173-303-830 or Permit Condition I.C.3.

Table J.1 identifies the sections of the unit-specific building emergency plan written to meet WAC 173-303-350(3) contingency plan requirements identified in this application. In addition, Section 12.0 of the unit-specific 400 Area WMU building emergency plan is written to meet WAC 173-303 requirements identifying where copies of Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) and the building emergency plan are located and maintained on the Hanford Facility. Therefore, revisions to Addendum E require a permit modification subject to WAC 173-303-830 and/or Permit Condition I.C.3.

Table J.1. Hanford Facility Documents Containing Contingency Plan Requirements of WAC 173 303-350(3)

Requirement	Permit Attachment 4 *Hanford Emergency Management Plan* (DOE/RL-94-02)	Building Emergency Plan[1] (HNF-IP-0263-FFTF)	Addendum J
-350(3)(a) - A description of the actions which facility personnel must take to comply with this section and WAC 173-303-360	X[2] Section 1.3.4	X[2] Sections 7.1, 7.2 through 7.2.5, and 7.3[3] Sections 4.0, 8.2, 8.3, 8.4, and 11.0	X[2] Sections J.3.1, J.3.2 through J.3.2.5, and J.3.3[3] Sections J.3, J.3.4, J.3.5, J.3.6, and J.5
-350 (3)(b) - A description of the actions which shall be taken in the event that a dangerous waste shipment, which is damaged or otherwise presents a hazard to the public health and the environment, arrives at the facility, and is not acceptable to the owner or operator, but cannot be transported pursuant to the requirements of WAC 173-303-370(5), Manifest system, reasons for not accepting dangerous waste shipments	X[2] Section 1.3.4	X[2,4] Section 7.2.5.1	X[2,4] Section J.3.2.5.1
-350(3)(c) - A description of the arrangements agreed to by local police departments, fire departments, hospitals, contractors, and state and local emergency response teams to coordinate emergency services as required in WAC 173-303-340(4).	X Sections 3.2.3, 3.3.1, 3.3.2, 3.4, 3.4.1.1, 3.4.1.2, 3.4.1.3, 3.7, and Table 3-1		

Requirement	Permit Attachment 4 *Hanford Emergency Management Plan* (DOE/RL-94-02)	Building Emergency Plan[1] (HNF-IP-0263-FFTF)	Addendum J
-350(3)(d) - A current list of names, addresses, and phone numbers (office and home) of all persons qualified to act as the emergency coordinator required under WAC 173-303-360(1). Where more than one person is listed, one must be named as primary emergency coordinator, and others must be listed in the order in which they will assume responsibility as alternates. For new facilities only, this list may be provided to the department at the time of facility certification (as required by WAC 173-303-810 (14)(a)(I)), rather than as part of the permit application.		X[5] Sections 3.1and 13.0	X[5] Sections J.2 and J.7
-350(3)(e) - A list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems, and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities.		X Section 9.0	X Section J.4
-350(3)(f) - An evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe the signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes.	X[6] Figure 7-3 and Table 5-1	X[7] Section 1.5	X[7] Section J.1

An 'X' indicates requirement applies.

[1] Portions of Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) not enforceable through Appendix A of that document are not made enforceable by reference in the building emergency plan.

[2] Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) contains descriptions of actions relating to the Hanford Site Emergency Preparedness System. No additional descriptions of actions are required at the site level. If other credible scenarios exist or if emergency procedures at the unit are different, the description of actions contained in the building emergency plan will be used during an event by a building emergency director.

[3] Sections 7.1, 7.2 through 7.2.5, and 7.3 of the building emergency plan are those sections subject to the Class 2 "Changes in emergency procedures (i.e., spill or release response procedures)" described in WAC 173-303-830, Appendix I, Section B.6.a.

[4] This requirement only applies to treatment, storage and disposal (TSD) units that receive shipment of dangerous or mixed waste defined as offsite shipments in accordance with WAC 173-303.

[5] Emergency Coordinator names and home telephone numbers are maintained separate from any contingency plan document on file in accordance with Permit Condition II.A.4 and is updated, at a minimum, monthly.

[6] The Hanford Facility (site wide) signals are provided in this document. No unit/building signal information is required unless unique devices are used at the unit/building.

[7] An evacuation route for the TSD unit must be provided. Evacuation routes for occupied buildings surrounding the TSD unit are provided through information boards posted within buildings.

J.1 Building Evacuation Routing (Building Layout)

Figures J.1 and J.2 provide identification of the primary and secondary staging areas and a general layout of the 400 Area WMU. Alternate evacuation routes will be used on a case-by-case basis based on meteorological conditions at the time of the event.

J.2 Building Emergency Director (BED)

Emergency response will be directed by the BED until the Incident Commander (IC) arrives. The incident command system (ICS) and staff, with supporting on-call personnel, fulfill the responsibilities of the Emergency Coordinator as discussed in WAC 173-303-360. During events, WMU personnel perform response duties under the direction of the BED. The Incident Command Post (ICP) is managed by either, the senior Hanford Fire Department member present or senior Hanford Patrol member present on the scene (security events only). These individuals are designated as the IC and as such, have the authority to request and obtain any resources necessary for protecting people and the environment.

The BED becomes a member of the ICP and functions under the direction of the IC. In this role, the BED continues to manage and direct 400 Area WMU operations.

A listing of the BEDs by title, work location, and work telephone number is contained in Section J.7. The BED is on the premises or is available through an "on-call" list 24-hours-a-day. Names and home telephone numbers of the BEDs are available from the Patrol Operations Center (POC) in accordance with Permit Condition II.A.4.

J.3 Implementation of the Plan

In accordance with WAC 173-303-360(2)(b), the BED ensures that trained personnel identify the character, source, amount, and areal extent of the release, fire, or explosion to the extent possible. Identification of waste can be made by activities that can include, but are not limited to, visual inspection of involved containers, sampling activities in the field, reference to inventory records, or by consulting with facility personnel. Samples of materials involved in an emergency might be taken by qualified personnel and analyzed as appropriate. These activities must be performed with a sense of immediacy and shall include available information.

The BED shall use the following guidelines to determine if an event has met the requirements of WAC 173-303-360(2)(d):

1. The event involved an unplanned spill, release, fire, or explosion,

AND

2.a The unplanned spill or release involved a dangerous waste, or the material involved became a dangerous waste as a result of the event (e.g., product that is not recoverable),

OR

2.b The unplanned fire or explosion occurred at the 400 Area WMU or transportation activity subject to RCRA contingency planning requirements,

AND

3. Time-urgent response from an emergency services organization was required to mitigate the event, or a threat to human health or the environment exists.

As soon as possible after stabilizing event conditions, the BED shall determine, in consultation with the site contractor environmental single-point-of-contact, if notification to the Washington State Department of Ecology (Ecology) is needed to meet WAC 173-303-360 (2)(d) reporting requirements. If all of the conditions under 1, 2, and 3 are met, notifications are to be made to Ecology. Additional information is found in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Section 4.2.

If review of all available information does not yield a definitive assessment of the danger posed by the incident, a worst-case condition will be presumed and appropriate protective actions and notifications will be initiated. The BED is responsible for initiating any protective actions based on their best judgment of the incident.

The BED must assess each incident to determine the response necessary to protect the personnel, facility, and the environment. If assistance from Hanford Patrol, Hanford Fire Department, or ambulance units is required, the Hanford Emergency Response Number (911 from site office phones/373-0911 from cellular phones) must be used to contact the POC and request the desired assistance. To request other resources or assistance from outside the 400 Area WMU, the POC business number is used (373-3800).

J.3.1 Protective Action Responses

Protective action responses are discussed in the following sections. The steps identified in the following description of actions do not have to be performed in sequence because of the unanticipated sequence of incident events.

J.3.1.1 Evacuation

When a Fast Flux Test Facility (FFTF) evacuation is ordered or the evacuation siren sounds, non-essential employees will turn off office equipment, obtain car keys and proceed to the staging area. Essential personnel are those who have been previously designated as having an emergency response role, are assigned to the on-shift Operations crew, or are utilized by the Emergency Response Organization during the event (e.g., RCTs, Stationary Operating Engineers). Once at the staging area, personnel will report to their prescribed location to allow for accountability. Personnel with physical handicaps should have monitors assigned as necessary to assist them during an evacuation.

Personnel in protective clothing when an evacuation alarm sounds should make an effort to undress at the normal undress area if safe to do so. These personnel must remain separated from others, and report to the Contaminated Personnel staging sign located outside at the north end of 4713-B, next to the Tool Crib door. An RCT will be dispatched to that location to survey personnel. If directed to the alternate staging area, it is recommended that personnel remove and leave protective clothing in the parking lot prior to entering their vehicle and upon arrival at the alternate staging area remain segregated from others and notify staging area personnel of the situation.

Personnel performing significant plant operations when an evacuation is initiated shall place the equipment in a stable configuration if safe to do so and then respond as appropriate to the evacuation.

The locations of the staging areas are shown on the illustrations in Section J.1. Within each occupied building the exits are clearly marked and evacuation routes to the staging area are maintained clear of obstacles. The supervisor (or delegate) is responsible for ensuring accountability of personnel at the ISA or FSF.

The BED will normally contact the POC to inform them of the event and ensure that necessary onsite and offsite protective actions are initiated. If additional transportation is needed for personnel, the BED may coordinate for additional transportation through RL-EOC.

J.3.1.2 Take Cover

The site area siren will sound to notify personnel of the need to take cover. Personnel shall respond to the first take cover signal sounded. The BED will normally contact the POC to inform them of the event and ensure that necessary onsite and offsite protective actions are initiated.

When the "Take Cover" Alarm is activated, personnel shall take cover in the nearest suitable (consider water supply, bathroom facilities, size, etc.) building or trailer, halt work, and if able place equipment in a safe condition. Close windows, exterior doors, interior doors, and/or window blinds for offices with windows, and secure heating, ventilation, and air conditioning (HVAC). If possible, personnel should move to interior hallways, and follow normal exit procedures from radiologically controlled areas in preparation for evacuation.

J.3.2 Response to Facility Operations Emergencies

Depending on the severity of the event, the BED reviews the site-wide and FFTF emergency response procedure(s) and, as required, categorizes and/or classifies the event. If necessary, the BED initiates area protective actions and Hanford Site Emergency Response Organization activation. The steps identified in the following description of actions do not have to be performed in sequence because of the unanticipated sequence of incident events.

J.3.2.1 Loss of Utilities

A loss of utilities is not expected to lead to an emergency condition or require implementation of protective actions.

A case-by-case evaluation is required for each event to determine loss of utility impacts. When a BED determines a loss of utility impact, actions are taken to ensure dangerous and/or mixed waste is being properly managed, to the extent possible given event circumstances. As necessary, the BED will stop operations and take appropriate actions until the utility is restored.

J.3.2.2 Major Process Disruption/Loss of Plant Control

There are no process upsets or losses of plant control that can have any effect at FFTF (including the 400 Area WMU). The FFTF facility has been deactivated and is currently being operated in accordance with the approved Surveillance & Maintenance Plan.

J.3.2.3 Pressure Release

There are no pressure containing systems at FFTF that would result in a potential emergency condition.

J.3.2.4 Fire and/or Explosion

In the event of a fire, the discoverer activates a fire alarm (pull box); calls 911 from site office phones/373-0911 from cellar phones or verifies that the Hanford Emergency Response Number (911 or 373-0911) has been called. Automatic initiation of a fire alarm (through the smoke detectors) is also possible.

- Unless otherwise instructed, personnel shall evacuate the area/building by the nearest safe exit and proceed to the designated staging area for accountability.
- On actuation of the fire alarm, ONLY if time permits, personnel should shut down equipment, and secure waste. The alarm automatically signals the Hanford Fire Department.
- The BED proceeds directly to the ICP, obtains all necessary information pertaining to the incident, and sends a representative to meet Hanford Fire Department.
- The BED provides a formal turnover to the IC, when the IC arrives at the ICP.
- The BED informs the Hanford Site Emergency Response Organization as to the extent of the emergency (including estimates of dangerous waste, mixed waste or radioactive material quantities released to the environment).
- If operations are stopped in response to the fire, the BED ensures that systems are monitored for leaks, pressure buildup, gas generation, and ruptures.
- Hanford Fire Department firefighters extinguish the fire as necessary.

J.3.2.5 Hazardous Material, Dangerous and/or Mixed Waste Spill

Spills can result from many sources including container spills or leaks, damaged packages or shipments, or personnel error. Spills of mixed waste are complicated by the need to deal with the extra hazards posed by the presence of radioactive materials.

- The discoverer notifies the BED and initiates SWIMS response:
  - **S**tops work
  - **W**arns others in the vicinity
  - **I**solates the area
  - **M**inimizes exposures to the hazards
  - Requests the BED **S**ecure ventilation
- The BED determines if emergency conditions exist, requiring response from the Hanford Fire Department based on classification of the spill and injured personnel, and evaluates the need to perform additional protective actions.
- If the Hanford Fire Department resources are not needed, the spill is mitigated with resources identified in Section J.4 and proper notifications are made.
- If the Hanford Fire Department resources are needed, the BED calls 911 from the site phones/373-0911 from cellular phones.
- The BED sends a representative to meet the Hanford Fire Department.
- The BED provides a formal turnover to the IC when the IC arrives at the ICP.
- The BED informs the Hanford Site Emergency Response Organization as to the extent of the emergency (including estimates of dangerous waste, mixed waste, or radioactive material quantities released to the environment).
- If operations are stopped in response to the spill, the BED ensures that systems are monitored for leaks, pressure buildup, gas generation, and ruptures.
- Hanford Fire Department stabilizes the spill.

J.3.2.6 Damaged or Unacceptable Shipments

During the course of receiving an onsite transfer of mixed waste at the 400 Area WMU, an unanticipated event could be discovered resulting in a conformance issue concerning the waste. Damaged or unacceptable shipments resulting from onsite transfers are not subject to WAC 173-303-370; however, conformance issues must be resolved in order to maintain proper records.

The following actions are taken to resolve the conformance issue:

- Operations management is notified of the damaged or unacceptable waste to be received.
- If the conformance issue results in a spill or release, actions described in Section J.3.2.5 are taken.
- The generating organization is notified of the conformance issue.
- An operations representative, in conjunction with the generating organization, determines the course of action to resolve the conformance issue.

J.3.3 Prevention of Recurrence or Spread of Fires, Explosions, or Releases

The BED, as part of the ICP, takes the steps necessary to ensure that a secondary release, fire, or explosion does not occur. The BED will take measures, where applicable, to stop processes and operations; collect and contain released wastes and remove or isolate containers. The BED shall also monitor for leaks, pressure buildups, gas generation, or ruptures in valves, pipes, or other equipment, whenever this is appropriate.

J.3.4 Incident Recovery and Restart of Operations

A recovery plan is developed when necessary in accordance with Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Section 9.2. A recovery plan is needed following an event where further risk could be introduced to personnel, the FFTF (including the 400 Area WMU), or the environment through recovery action and/or to maximize the preservation of evidence.

If this plan was implemented according to Section J.3, Ecology must be notified before operations can resume. Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Section 5.1 discusses different reports to outside agencies. This notification is in addition to those required reports and must include the following statements:

- There are no incompatibility issues with the waste and released materials from the incident.
- All the equipment has been cleaned, fit for its intended use, and placed back into service.

The notification required by WAC 173-303-360(2)(j) may be made via telephone conference. Additional information that Ecology requests regarding these restart conditions will be included in the required 15-day report identified in Section J.5.

For emergencies not involving activation of the Hanford-EOC, the BED ensures that conditions are restored to normal before operations are resumed. If the Hanford Site Emergency Response Organization was activated and the emergency phase is complete, a special recovery organization could be appointed at the discretion of DOE to restore conditions to normal. This process is detailed in DOE and contractor emergency procedures. The makeup of this organization depends on the extent of the damage and its effects. The onsite recovery organization will be appointed by the appropriate contractor's management.

J.3.5 Incompatible Waste

After an event, the BED or the onsite recovery organization ensures that no waste that might be incompatible with the released material is treated, stored, and/or disposed of until cleanup is completed. Clean up actions are taken by 400 Area WMU personnel or other assigned personnel. Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Section 9.2.3, describes actions to be taken.

Waste from cleanup activities is designated and managed as newly generated waste. A field check for compatibility before storage is performed, as necessary. Incompatible wastes are not placed in the same container. Containers of waste are placed in approved storage areas appropriate for their compatibility class.

If incompatibility of waste was a factor in the incident, the BED or the onsite recovery organization ensures that the cause is corrected.

J.3.6 Post Emergency Equipment Maintenance and Decontamination

All equipment used during an incident is decontaminated (if practicable) or disposed of as spill debris. Decontaminated equipment is checked for proper operation before storage for subsequent use. Consumables and disposed materials are restocked. Fire extinguishers are replaced.

The BED ensures that all equipment is cleaned and fit for its intended use before operations are resumed. Depleted stocks of neutralizing and absorbing materials are replenished; protective clothing is cleaned or disposed of and restocked, etc.

J.4 Emergency Equipment

Emergency resources and equipment for the FFTF (including the 400 Area WMU) are presented in this section.

J.4.1 Fixed Emergency Equipment

None, refer to Section J.4.2.

J.4.2 Portable Emergency Equipment

Portable Emergency Equipment		
Type	**Location**	**Capability**
Fire Extinguisher	A fire extinguisher is available at the ISA pad (inside the locked fenced area on the fence near the gate) and at the FSF building (adjacent to the entrance).	Portable Class D fire extinguishers are available for use to respond to fires at the FSF and the ISA.
Emergency Response Kit	An emergency response kit is maintained at the facility. All personnel entering the noted areas, regardless of the type of work being performed, must be made aware of the emergency kit location prior to entering the areas.	Boundary control, personal protective equipment (PPE) for response, first aid kit, and emergency lights.

J.4.3 Communications Equipment/Warning Systems

Communications Equipment		
Type	**Location**	**Capability**
Fire Alarm Continuously Ringing Bell Or Electronic Gong And Strobe or Area Siren	Fire alarm – at or near building exits in buildings 405; 491E, S, & W; 4621E & W; and 4703. Siren alert – The siren can be clearly heard by personnel at the ISA and by support personnel at the FSF when staff are in the building. When appropriate, personnel at the FSF and ISA will be notified of fire alarms at the 400 Area.	Alerts personnel of a potential fire or other emergency notifications in their area.
2-Way Radio/Cell Phone	At least one with personnel while in the TSD unit location.	Notify personnel to summon emergency assistance.
Argon pressure monitoring system	FFTF argon dewar pad located on a pad west of the main FFTF Plant.	Notify personnel of over or under pressure in the inert cover gas for piping and components containing sodium residuals.

Note: Site wide communications and warning systems are identified in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Table 5.1.

J.4.4 Personal Protective Equipment

Personal Protective Equipment		
Type	**Location**	**Capability**
Personal Protective Equipment	Personal Protective Equipment is available and will be staged when work is performed at the 400 Area WMU location.	Protection from various hazards (e.g. smoke, fumes, oxygen deficient atmosphere, chemicals, high airborne radioactivity, radiological contamination, insufficient lighting). PPE clothing can be based on specific job requirements.

J.4.5 Spill Control and Containment Supplies

Spill Kits And Spill Control Equipment		
Type	**Location**	**Capability**
Spill Control Materials • Absorbent materials • Bags • Step-off pads • Barrier tape • Rags • Scissors	One spill kit will be located at the 400 Area WMU and will be clearly identified. All personnel entering either the ISA or FSF will be made aware of the location of the spill kit.	Control and mitigation of radioactive and chemical spills.

J.4.6 Incident Command Post

The ICPs can be identified in a fixed location or the IC can determine a location appropriate for the event. Emergency resource materials are stored at each location. The IC could activate the Hanford Fire Department Mobile Command Unit if necessary.

J.5 Required Reports

Post-incident written reports are required for certain incidents on the Hanford Site. The reports are described in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Section 5.1.

Facility management must note in the TSD-unit operating record, the time, date, and details of any incident, which requires implementation of the contingency plan. Within 15 days after the incident, a written report must be submitted to Ecology. The report must, at a minimum, include the elements specified in WAC 173-303-360(2)(k).

J.6 Plan Location and Amendments

Copies of this plan are maintained in following locations:

- MO-294

This plan will be reviewed and immediately amended as necessary, in accordance with Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Section 14.3.1.1.

J.7 Building Emergency Organization Building Emergency Director

FFTF BEDs		
Title	**Work Location**	**Work Phone**
Facility Operations	MO 294	373-1355

Names and home telephone numbers of the BEDs are available from the POC (373-3800) in accordance with Permit Condition II.A.4.

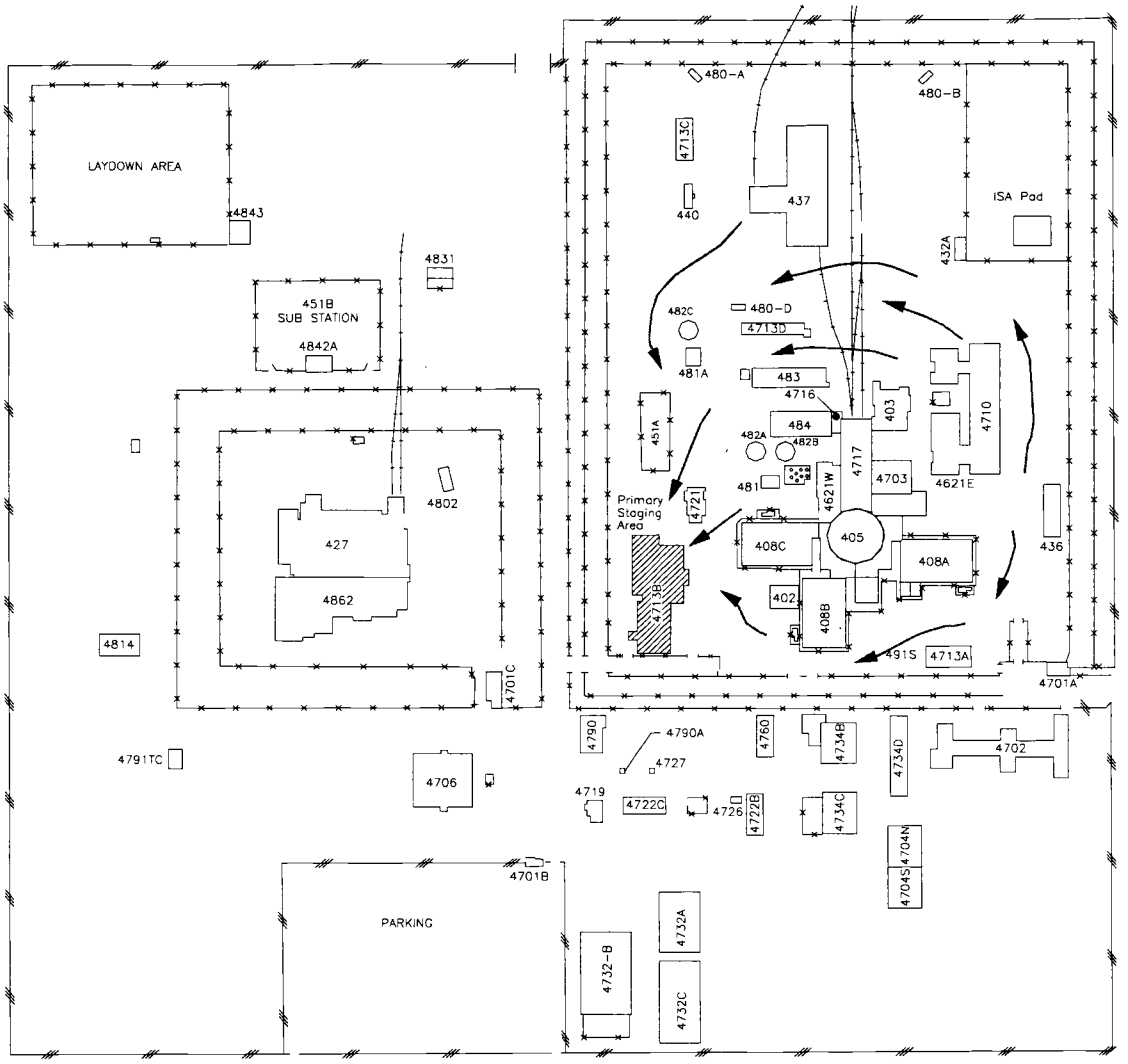

Figure J.1. FFTF Primary Staging Area

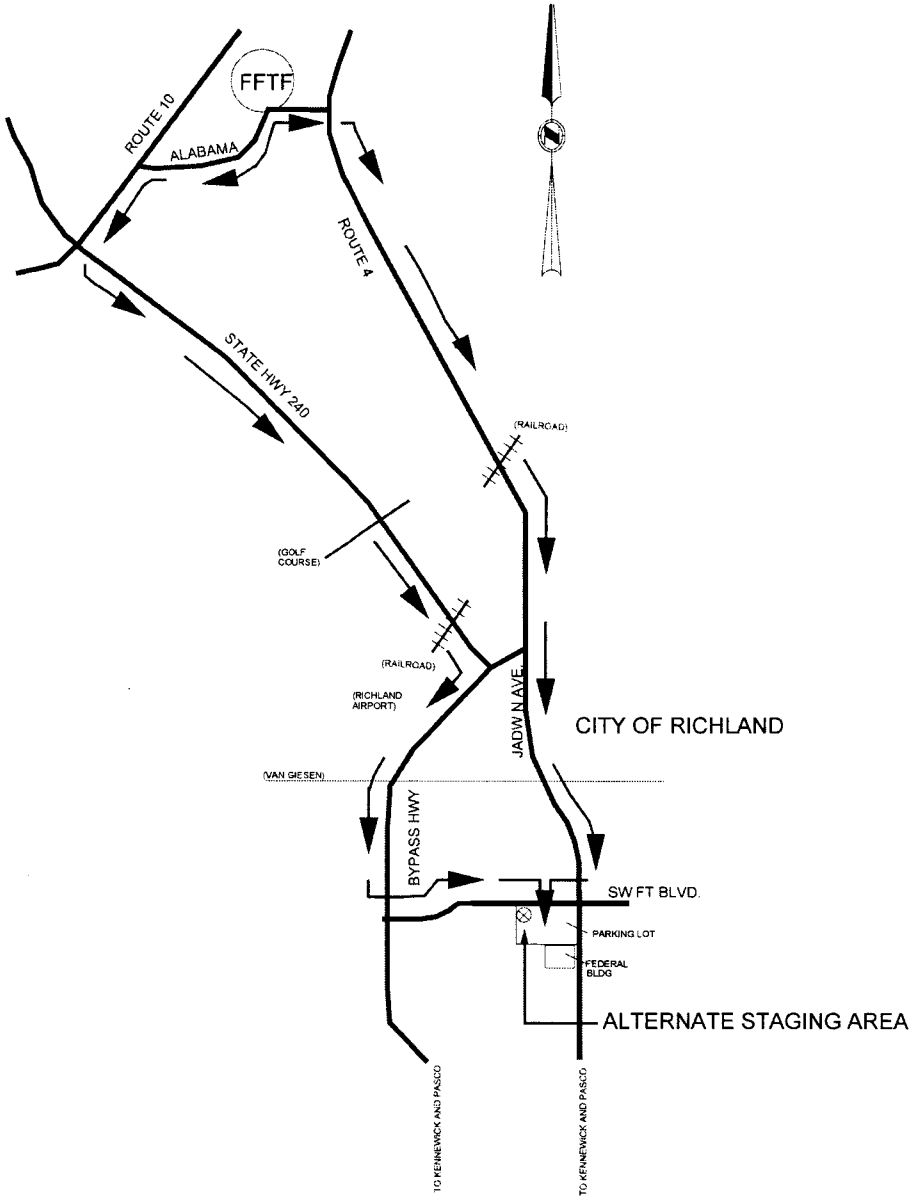

Figure J.2. FFTF Alternate Staging Area

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