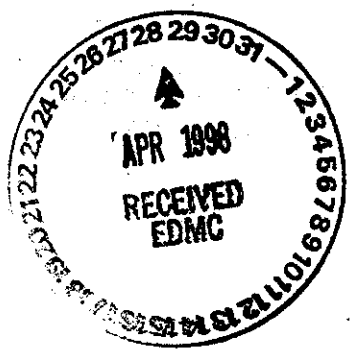
0049087

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

98-EAP-209

APR 10 1998



Ms. L. J. Cusack
Hanford Facility RCRA Permit Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 West Fourth Avenue
Kennewick, Washington 99336-6018

Dear Ms. Cusack:

QUARTERLY NOTIFICATION OF CLASS 1 MODIFICATIONS TO THE HANFORD FACILITY RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) PERMIT, DANGEROUS WASTE PORTION (DW PORTION) (QUARTER ENDING MARCH 31, 1998, CONDITION I.C.3.)

Condition I.C.3. of the Hanford Facility RCRA Permit (DW Portion) addresses Class 1 modifications as defined in Washington Administrative Code (WAC) 173-303-830(4)(a)(i)(A). This condition allows for quarterly notification of Class 1 modifications to be made to the State of Washington Department of Ecology (Ecology). These modifications are under implementation. A listing of these modifications is maintained in the Hanford Facility Operating Record. The Class 1 modifications are discussed as follows.

Enclosed for your notification is the Class 1 modification to the Hanford Facility RCRA Permit DW Portion. Modifications this quarter included updating information in Part I and Part III (enclosure). Part I Class 1 modifications pertain to the Hanford Facility Dangerous Waste Permit Application, General Information Portion. Part III Class 1 modifications pertain to the 616 Nonradioactive Dangerous Waste Storage Facility, 242-A Evaporator, Liquid Effluent Treatment Facility and 200 Area Effluent Treatment Facility, and 305-B Storage Facility. The Class 1 modifications are being made to ensure that all activities conducted are in compliance with the RCRA Permit DW Portion.

In accordance with Attachment 33, Chapter 12 of the Hanford Facility RCRA Permit, a transmittal letter signed by the permittees is sufficient to authorize the submittal of the Quarterly Notification of Class 1 Modifications to the Hanford Facility RCRA Permit (DW Portion) and to meet the intent of Permit Condition I.F., Signatory Requirement.

Should you have any questions regarding this information, please contact Ellen M. Mattlin, U.S. Department of Energy, Richland Operations Office, on (509) 376-2385; Susan M. Price, Fluor Daniel Hanford, Inc., on 509) 376-1653; or Harold T. Tilden II, Pacific Northwest National Laboratory, on (509) 376-0499.

Sincerely,

James E. Rasmussen, Director
Environmental Assurance, Permits,
and Policy Division
DOE Richland Operations Office

William D. Adair, Director
Environmental Protection
Responsible Party for
Fluor Daniel Hanford, Inc.

Richard S. Watkins, Director
Environment, Safety, and Health
Pacific Northwest National Laboratory

Enclosure:
Class 1 Modifications to
the Hanford Facility
RCRA Permit (DW Portion)
(Quarter Ending March 31, 1998)

cc w/encl:
Administrative Record H6-08
L. M. Johnson, BHI
R. J. Landon, BHI
J. R. Wilkinson, CTUIR
S. M. Price, FDH
D. L. Powaukee, NPT
H. T. Tilden, PNNL
R. Jim, YIN

cc w/o encl:
W. D. Adair, FDH
M. C. Hughes, BHI
D. R. Sherwood, EPA
E. R. Skinnarland, Ecology
R. S. Watkins, PNNL

Hanford Facility RCRA Permit Modification Notification Forms

for

Part I, Attachment 33

Hanford Facility Dangerous Waste Permit Application, General Information Portion

THIS PAGE INTENTIONALLY
LEFT BLANK

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Facility Dangerous Waste Permit Application, General Information Portion	**Part I, Attachment 33 [Chapter 12]**

Description of Modification:

Pages T12-1.2, Table 12-1 (sheet 2 of 6), lines 9-10:

Class 1 Modification
Quarter ending 03/31/98

DOE/RL 91-28, Rev. 3a

Table 12-1. Reports and Records. (sheet 2 of 6)

	HF RCRA Permit condition	Records and/or Reports (Chapter 12.0 section containing description)		Hanford Facility Operating Record: General information file[2]	Hanford Facility Operating Record: Unit-specific file[2]	Type of submittal: Verbal[1]	Type of submittal: Transmittal letter[3]	Type of submittal: Certified package
1	I.E.20.	Other information (12.1.12)	Unit		✓	✓		
			Facility	✓				
2	I.H.	Permit-related documentation: HF RCRA Permit and all attachments and modifications (12.1.13)	Facility	✓				
3		Permit-related documentation: Part B permit application, closure plan, closure/postclosure plan, postclosure permit application documentation (12.1.13)	Unit		✓			
4	II.F.4.	Notification of Permit-related information (12.1.14)	Unit		✓		✓	
			Facility	✓				
5	II.I.1.a.	Waste location (12.1.15, 12.1.31)	Unit		✓			
			Facility	✓				
6	II.I.1.b.	Waste analysis (12.1.16)	Unit		✓			
7	II.O.		Facility	✓				
8	II.I.1.c.	Occurrence reports (12.1.17, 12.1.31)	Unit		✓			
			Facility	✓				
9	II.I.1.d.	Unmanifested waste reports (12.1.18)	Unit		✓			
10	I.E.18.		Facility	✓				

980323.0857

T12-1.2

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
William D Adair 3/30/98	J. E Rasmussen 4/10/98	
W. D. Adair Date	J. E. Rasmussen Date	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Facility Dangerous Waste Permit Application, General Information Portion	**Part I, Attachment 33 [Chapter 12]**

Description of Modification:

T12-1.3, Table 12-1 (sheet 3 of 6), line 7-8:

Class 1 Modification
Quarter Ending 03/31/98

DOE/RL-91-28, Rev. 3a
(4-97)

Table 12-1. Reports and Records. (sheet 3 of 6)

	HF HCRA Permit condition[1]	Records and/or Reports (Chapter 12.0 section containing description)		Hanford Facility Operating Record: General information file[2]	Hanford Facility Operating Record: Unit-specific file[3]	Type of submittal: Verbal[4]	Type of submittal: Transmittal letter	Type of submittal: Certified package
1	II.I.1.e. II.A. (all)	Hanford Facility Contingency Plan and incident records (12.1.19)	Unit		✓			(II.A.1. only)
2			Facility	✓		✓	✓	
3	II.I.1.f. II.C.	Personnel training records (12.1.20, 12.1.31)	Unit		✓			
4			Facility	✓				
5	II.I.1.g. II.B.4.	Preparedness and prevention arrangements (12.1.21)	Facility	✓				
6		Projections of anticipated costs for closure and postclosure and postclosure monitoring and maintenance (12.1.22, 12.1.25, and 12.1.31)	Unit		✓			
7	II.I.1.i. II.H.		Facility	✓			✓	
8								
9	II.I.1.j.	Onsite transportation documentation (12.1.23)	Unit		✓			
10	II.I.1.k.	Cross-reference of waste location to waste manifest numbers (12.1.24, 12.1.31)	Unit		✓			
			Facility	✓				

980325.0906

T12-1.3

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
W. D. Adair 3/30/98	J. E. Rasmussen 4/10/98	Date
W. D. Adair Date	J. E. Rasmussen Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

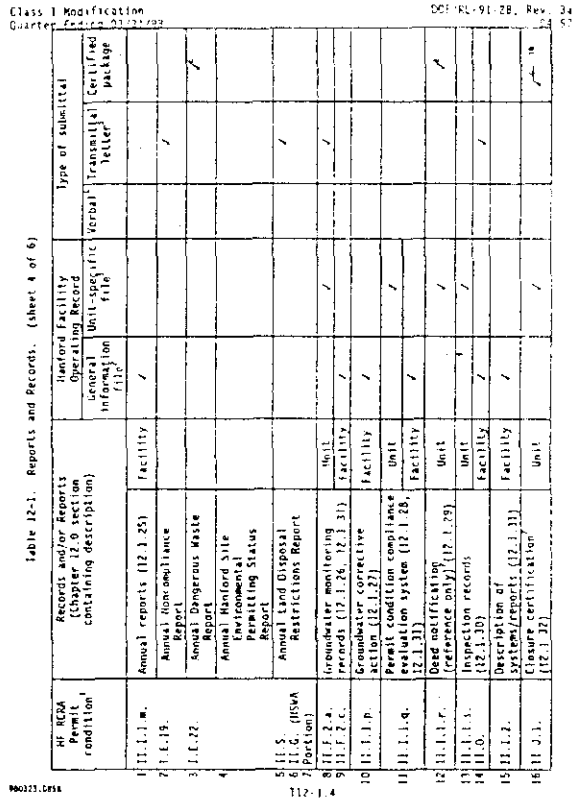
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Facility Dangerous Waste Permit Application, General Information Portion	**Part I, Attachment 33 [Chapter 12]**

Description of Modification:

T12-1.4, Table 12-1 (sheet 4 of 6), line 16:



Class 1 Modification
Quarter ending 03/31/98
DOE/RL-91-28, Rev. 3A

Table 12-1. Reports and Records. (sheet 4 of 6)

	HF RCRA Permit condition	Records and/or Reports (Chapter 12.0 section containing description)		Hanford Facility Operating Record: General information file	Hanford Facility Operating Record: Unit-specific file	Type of submittal: Verbal	Type of submittal: Transmittal letter	Type of submittal: Certified package
1	II.I.1.m.	Annual reports (12.1.25)	Facility	✓				
2	II.E.19.	Annual Noncompliance Report					✓	
3	II.E.22	Annual Dangerous Waste Report						✓
4		Annual Hanford Site Environmental Permitting Status Report						
5	II.S	Annual Land Disposal Restrictions Report					✓	
6	II.G. (HSWA Portion)							
7								
8	II.F.2.a.	Groundwater monitoring records (12.1.26, 12.1.31)	Unit		✓		✓	
9	II.F.2.c.		Facility	✓				
10	II.I.1.p.	Groundwater corrective action (12.1.27)	Facility	✓				
11	II.I.1.q.	Permit condition compliance evaluation system (12.1.28, 12.1.31)	Unit		✓			
			Facility	✓				
12	II.I.1.r.	Dead notification (reference only) (12.1.29)	Unit		✓			✓
13	II.I.1.s.			✓				
14	II.O.	Inspection records (12.1.30)	Unit		✓			
			Facility	✓			✓	
15	II.I.2.	Description of system/reports (12.1.31)	Facility	✓				
16	II.J.1.	Closure certification (12.1.32)	Unit		✓			✓

960323.0858

T12-1.4

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
William D Adair 3/30/98	J E Rasmussen 4/10/98	
W. D. Adair Date	J. E. Rasmussen Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Facility Dangerous Waste Permit Application, General Information Portion	**Part I, Attachment 33 [Chapter 12]**

Description of Modification:

Page T12-1.6, Table 12-1 (sheet 6 of 6), lines 4-19:

[1] HF RCRA Permit (DW Portion) Condition, unless otherwise noted.
[2] Hanford Facility Operating Record, General Information file.
[3] Hanford Facility Operating Record, Unit-Specific file.
[4] Verbal reporting in accordance with timeframes noted in the specified conditions.
[5] Not certified; submittal by transmittal letter.
[6] Certified by Permittees in accordance with WAC 173-303-810(12).
[7] Miscellaneous support records and reports.
[8] Certified by a registered professional engineer [e.g., in accordance with WAC 173-303-810(14)(a)(i) (refer to Chapter 4.0, Section 4.13.4)].
[9] Specific language preprinted on Washington State Department of Ecology's *TSD Facility Unmanifested Dangerous Waste Report, Form 6*, provides certification in accordance with WAC 173-303-390(1) and WAC 173-303-390(1)(f).
[9 10] Certified by a registered professional engineer [e.g., in accordance with WAC 173-303-610(6) or WAC 173-303-610(11)

Modification Class: [2 3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
W. D. Adair 3/30/98	J. E. Rasmussen 4/10/98	Date
W. D. Adair Date	J. E. Rasmussen Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Part I, Attachment 33

Hanford Facility Dangerous Waste Permit Application, General Information Portion

Page Changes

THIS PAGE INTENTIONALLY
LEFT BLANK

Table 12-1. Reports and Records. (sheet 1 of 6)

HF RCRA Permit condition[1]	Records and/or Reports (Chapter 12.0 section containing description)		Hanford Facility Operating Record		Type of submittal		
			General information file[2]	Unit-specific file[3]	Verbal[4]	Transmittal letter[5]	Certified package
I.C.3.	Quarterly Notification of Class 1 Modification notification (12.1.1)	Unit		✓		✓	
		Facility	✓				
I.E.10.b. I.E.10.c. II.I.1.n.	Monitoring and records (12.1.2)	Unit		✓			
		Facility	✓				
I.E.11.	Reporting planned changes[7] (12.1.3)	Unit		✓	✓		
		Facility	✓				
I.E.12.i.	Certification of construction or modifications[7] (12.1.4)	Unit		✓			✓[8]
I.E.13.	Anticipated noncompliance[7] (12.1.5)	Unit		✓	✓	✓	
		Facility	✓				
I.E.14.	Transfer of permits[7] (12.1.6)	Facility	✓			✓	
I.E.15.a. I.E.15.c.	Immediate reporting (12.1.7)	Unit		✓	✓		
		Facility	✓				
I.E.15.d.	Release or noncompliance not requiring immediate reporting (12.1.8)	Unit		✓			
		Facility	✓				
I.E.16.	Written reporting (12.1.9)	Unit		✓		✓	
		Facility	✓				
I.E.17.a.	Manifest discrepancy report (12.1.10)	Unit		✓		✓	
		Facility	✓				
I.E.17.b.	Waste tracking form discrepancy report (12.1.11)	Unit		✓			

Table 12-1. Reports and Records. (sheet 2 of 6)

	HF RCRA Permit condition[1]	Records and/or Reports (Chapter 12.0 section containing description)		Hanford Facility Operating Record		Type of submittal		
				General information file[2]	Unit-specific file[3]	Verbal[4]	Transmittal letter[5]	Certified package
1	I.E.20.	Other information (12.1.12)	Unit		✓	✓	✓	
			Facility	✓				
2	I.H.	Permit-related documentation: HF RCRA Permit and all attachments and modifications (12.1.13)	Facility	✓				
3		Permit-related documentation: Part B permit application, closure plan, closure/postclosure plan, postclosure permit application documentation (12.1.13)	Unit		✓			
4	II.E.4.	Notification of Permit-related information (12.1.14)	Unit		✓		✓	
			Facility	✓				
5	II.I.1.a.	Waste location (12.1.15, 12.1.31)	Unit		✓			
			Facility	✓				
6 7	II.I.1.b. II.D.	Waste analysis (12.1.16)	Unit		✓			
			Facility	✓				
8	II.I.1.c.	Occurrence reports (12.1.17, 12.1.31)	Unit		✓			
			Facility	✓				
9 10	II.I.1.d. I.E.18.	Unmanifested waste reports (12.1.18)	Unit		✓		✓[9]	
			Facility	✓				

Table 12-1. Reports and Records. (sheet 3 of 6)

	HF RCRA Permit condition[1]	Records and/or Reports (Chapter 12.0 section containing description)		Hanford Facility Operating Record		Type of submittal		
				General information file[2]	Unit-specific file[3]	Verbal[4]	Transmittal letter[5]	Certified package
1	II.I.1.e.	Hanford Facility Contingency Plan and incident records (12.1.19)	Unit		✓	✓	✓	✓ (II.A.1. only)
2	II.A. (all)		Facility	✓				
3	II.I.1.f.	Personnel training records (12.1.20, 12.1.31)	Unit		✓			
4	II.C.		Facility	✓				
5	II.I.1.g.	Preparedness and prevention arrangements (12.1.21)	Facility	✓				
6	II.B.4.							
7	II.I.1.i.	Projections of anticipated costs for closure and postclosure and postclosure monitoring and maintenance (12.1.22, 12.1.25, and 12.1.31)	Unit		✓		✓	
8	II.H.		Facility	✓				
9	II.I.1.j.	Onsite transportation documentation (12.1.23)	Unit		✓			
10	II.I.1.k.	Cross-reference of waste location to waste manifest numbers (12.1.24, 12.1.31)	Unit		✓			
			Facility	✓				

Table 12-1. Reports and Records. (sheet 4 of 6)

	HF RCRA Permit condition[1]	Records and/or Reports (Chapter 12.0 section containing description)		Hanford Facility Operating Record		Type of submittal		
				General information file[2]	Unit-specific file[3]	Verbal[4]	Transmittal letter[5]	Certified package
1	II.I.1.m.	Annual reports (12.1.25)	Facility	✓				
2	I.E.19.	Annual Noncompliance Report					✓	
3	I.E.22.	Annual Dangerous Waste Report						✓[6]
4		Annual Hanford Site Environmental Permitting Status Report						
5 6 7	II.S. II.G. (HSWA Portion)	Annual Land Disposal Restrictions Report					✓	
8	II.F.2.a.	Groundwater monitoring records (12.1.26, 12.1.31)	Unit		✓		✓	
9	II.F.2.c.		Facility	✓				
10	II.I.1.p.	Groundwater corrective action (12.1.27)	Facility	✓				
11	II.I.1.q.	Permit condition compliance evaluation system (12.1.28, 12.1.31)	Unit		✓			
			Facility	✓				
12	II.I.1.r.	Deed notification (reference only)[7](12.1.29)	Unit		✓			✓[8]
13	II.I.1.s.	Inspection records (12.1.30)	Unit		✓			
14	II.O.		Facility	✓			✓	
15	II.I.2.	Description of systems/reports (12.1.31)	Facility	✓				

Table 12-1. Reports and Records. (sheet 5 of 6)

	HF RCRA Permit condition[1]	Records and/or Reports (Chapter 12.0 section containing description)		Hanford Facility Operating Record		Type of submittal		
				General information file[2]	Unit-specific file[3]	Verbal[4]	Transmittal letter[5]	Certified package
1	II.J.1.	Closure certification[7] (12.1.32)	Unit		✓			✓[10]
2	II.J.3.	Notification of, or request for, a permit modification[7] (12.1.33)	Unit		✓		✓	✓[6]
			Facility	✓				
3	II.K.6.	Closure plan deviation[7] (12.1.34)	Unit		✓			
4 5 6	II.I.1.t. II.L.2.b. II.L.2.c.	Engineering change notices and nonconformance reports (12.1.35)	Unit		✓			✓[8]
7	II.L.2.d.	As-built drawings[7] (12.1.36)	Unit		✓			
8 9	II.N.2. II.N.3.	Receipt of wastes generated offsite[7] (12.1.37)	Unit		✓		✓	
10	II.R.	Equivalent materials[7] (12.1.38)	Unit		✓			
11 12 13	II.S. II.G (HSWA Portion)	Land disposal restrictions records (12.1.39)	Unit		✓		✓	
14	II.U.	Mapping methodology report and underground pipeline maps (12.1.40)	Facility	✓			✓	
15	II.W.1.	Other permit compliance documentation[7] (12.1.41)	Unit		✓			
			Facility	✓				
16	II.X.1.	Schedule extensions[7] (12.1.42)	Unit		✓		✓	
			Facility	✓				

Table 12-1. Reports and Records. (sheet 6 of 6)

HF RCRA Permit condition[1]	Records and/or Reports (Chapter 12.0 section containing description)		Hanford Facility Operating Record		Type of submittal		
			General information file[2]	Unit-specific file[3]	Verbal[4]	Transmittal letter[5]	Certified package
II.F (HSWA Portion)	Waste minimization/pollution prevention (12.1.43)	Unit		✓			

[1] HF RCRA Permit (DW Portion) Condition, unless otherwise noted.
[2] Hanford Facility Operating Record, General Information file.
[3] Hanford Facility Operating Record, Unit-Specific file.
[4] Verbal reporting in accordance with timeframes noted in the specified conditions.
[5] Not certified; submittal by transmittal letter.
[6] Certified by Permittees in accordance with WAC 173-303-810(12).
[7] Miscellaneous support records and reports.
[8] Certified by a registered professional engineer [e.g., in accordance with WAC 173-303-810(14)(a)(i) (refer to Chapter 4.0, Section 4.13.4)].
[9] Specific language preprinted on Washington State Department of Ecology's *TSD Facility Unmanifested Dangerous Waste Report, Form 6*, provides certification in accordance with WAC 173-303-390(1) and WAC 173-303-390(1)(f).
[10] Certified by a registered professional engineer [e.g., in accordance with WAC 173-303-610(6) or WAC 173-303-610(11).

Hanford Facility RCRA Permit Modification Notification Forms

for

Part III, Chapter 2

305-B Storage Facility

THIS PAGE INTENTIONALLY
LEFT BLANK

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 2]**

Description of Modification:

Page 2-ii, lines 11-12: provided new Contents.

2-8. Example Chemical Disposal/Recycle Request Form. ..... ~~2119~~ 2
2-9. Example Chemical Disposal/Recycle Request Form (Reverse) ..... ~~2220~~ 3

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.2

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
2. Correction to typographical errors

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 2.1.1]**

Description of Modification:

Page 2-1, Section 2.1.1, line 40:

2.1.1 The Hanford Site

The Hanford Site consists of approximately 560 square miles (1450 square km) of semi-arid land that is owned by the U.S Government and managed by DOE-RL. This site is located northwest of the City of Richland, Washington, along the Columbia River (Fig. 2-1). The City of Richland adjoins the southernmost portion of the Hanford Site boundary and is the nearest population center. In early 1943, the U.S. Army Corps of Engineers selected the Hanford Site as the location for reactor, chemical separation, and related facilities for the production and purification of plutonium. A total of eight graphite-moderated reactors using Columbia River water for once-through cooling were built along the river. These reactors were operated from 1944 to 1971.

N Reactor, a dual-purpose reactor for production of plutonium and generation of byproduct steam for production of electricity, uses recirculating water coolant. N Reactor began operating in 1963 and was placed in permanent shutdown status in 1991.

Activities are centralized in numerically designated areas on the Hanford Site. The reactor facilities (active and decommissioned) are located along the Columbia River in the 100 Areas. The reactor fuel processing and waste management facilities are located in the 200 Areas, situated on a plateau about 7 miles (11.2 km) from the river. The 300 Area, located north of Richland, contains mostly reactor fuel manufacturing facilities and research and development laboratories. The 400 Area, 5 miles (8 km) northwest of the 300 Area, contains the Fast Flux Test facility. The 1100 Area, north of Richland, contains buildings associated with maintenance and transportation functions for the Hanford Site. Administrative buildings and other research and development laboratories are found in the ~~3000 Area, also north of~~ Richland North Area (RCHN). Administrative buildings are also located in the 700 Area in downtown Richland.

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 2.1.2]**

Description of Modification:

Page 2-3, Section 2.1.2, lines 1-18:

2.1.2 The 305-B Storage Unit

The 305-B Storage Unit is a dangerous waste and RMW storage unit owned and operated by DOE and co-operated by PNNL ~~PNL~~. The unit is used for the collection, consolidation, packaging, storage, and preparation for transport and disposal of both dangerous waste and RMW. It is an integral part of the Hanford Site's waste management system.

The 305-B unit is a one-story frame and masonry building with basement constructed in the early 1950s, with an attached two-story-high metal and concrete building constructed in January 1978, referred to in this document as the "high bay." The unit is located within the 300 Area, as shown in Figure 2-2, and was formerly used for engineering research and development. Unit upgrades were completed in 1988 to meet requirements for storage of dangerous waste and RMW. Waste storage under interim status began in March 1989.

A variety of small volume chemical wastes are generated by PNNL's ~~PNL's~~ research laboratory activities under contract to DOE. These wastes are brought to the 305-B unit and segregated by compatibility for storage in the unit until enough waste is accumulated to fill a labpack or bulking container, usually a 30- to 55-gallon drum. When a sufficient number of shipping containers of waste has accumulated, they are manifested for shipment, generally to permitted off-site recycling, treatment or disposal facilities.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification. this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 2.4]**

Description of Modification:

Page 2-11, Section 2.4, lines 1-17:

2.4 TRAFFIC INFORMATION [B-4]

The DOE-controlled Hanford Site is traversed by numerous primary and secondary roads as shown by Figure 2-6. The DOE roadways inside the site, except for Routes 4S and 10 south of the Wye Barricade, are restricted to authorized personnel and cannot be accessed by the general public. The majority of the site traffic consists of light duty vehicles ~~and buses used~~ to transport employees to various operation sites within the Hanford boundary. Primary routes include Routes 4S, 10, 4N, 2N, 1, 6, 11A, as well as various avenues within the site boundary. The primary routes are constructed of bituminous asphalt (usually 2 in. thick, but the thickness of the asphalt layer will vary with each road) with an underlying aggregate base in accordance with U.S. Department of Transportation (DOT) requirements. The secondary routes are constructed of layers of an oil and rock mixture with an underlying aggregate base. The aggregate base consists of various types and sizes of rock found on site. Currently, no load-bearing capacities of these roads are available; however, loads as large as 140 pounds per square in. have been transported without observable damage to road surfaces.

Access to the 300 Area by vehicular traffic is by Stevens Drive and George Washington Way. Traffic on Stevens Drive consists of personal vehicles, ~~buses~~ for the transport of personnel to and from work, and light duty trucks for the transport of materials. Traffic on George Washington Way consists almost exclusively of personal vehicles.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.2

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 2.5.8]**

Description of Modification:

Page 2-14, Section 2.5.8, lines 26-32:

2.5.8 Measures to Prevent the Use of Processes That Do Not Treat, Detoxify, Recycle, Reclaim, and Recover Waste Material to the Extent Economically Feasible

The 305-B unit was established, in part, to enhance DOE's and PNNL's ~~PNL's~~ efforts to eliminate or minimize dangerous waste generation, and to treat, detoxify, recycle, reclaim and recover waste materials. A full description of the efforts being undertaken at the 305-B unit to eliminate or minimize waste generation is presented in Chapter 10 of this application.

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
B. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 2.5.8]**

Description of Modification:

Page 2-19, Section 2.5.8, lines 6-10:

If the waste is found to be acceptable for transport, Waste Management staff will check to ensure required labels are in place, and transport (or arrange for transport of) the waste to 305-B. If transport will be over public roadways or highways, a Uniform Hazardous Waste Manifest will be prepared identifying PNNL ~~PNL~~ as the transporter and 305-B as the receiving TSD unit. A copy of all such manifests is returned to the generating unit within 30 days of receipt at 305-B. A copy of the manifest is also retained at 305-B.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:	
G. W. McNair	Date 3/20/98	R. F. Christensen	Date 4/7/98		Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Figure 2-8]**

Description of Modification:

Page 2-21, Figure 2-8:

Corrected page numbering: 2-21 ~~2-19~~

Modification Class: [2 3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.2

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   2. Correction to typographical errors

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Figure 2-9]**

Description of Modification:

Page 2-22, Figure 2-9:

Corrected page numbering: 2-22 ~~2-20~~

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.2

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
2. Correction to typographical errors

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Chapter 3]**

Description of Modification:

Providing complete Chapter 3. Converted document from WordPerfect 5.1, which caused all page breaks to shift. This version of Chapter 3 will be Revision 1A.

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 3.2]**

Description of Modification:

Page 3-4, Section 3.2, lines 14-26:

3.2 WASTE ANALYSIS PLAN [C-2]

This section describes the procedures used to obtain the information necessary to manage wastes in accordance with the requirements of WAC 173-303 (Ecology 1989). This section is intended to correlate with the Waste Analysis Plan submitted in the Hanford Facility Permit Application (DOE/RL-91-28). If that plan is modified, this plan will be modified to reflect those changes.

Most of the information necessary to manage wastes at 305-B is obtained from generating units without the need to perform detailed chemical, physical, and biological analysis. This approach is used for the following reasons:

- All wastes stored at 305-B are generated on the Hanford Site and/or by PNNL ~~PNL~~ research programs; effective administrative control can be maintained over individual waste generating units (i.e., the same organization generates the wastes and operates the storage unit)

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification:

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair — 3/20/98 Date	R. F. Christensen — 4/7/98 Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 3.2]**

Description of Modification:

Page 3-6, Section 3.2, lines 36-39:

Transportation. The labeled containers are transported to 305-B by PNNL ~~PNL~~ staff. Staff responsible for transporting wastes are trained in applicable DOT requirements and emergency response. Wastes are transported using a truck or light utility vehicle. For transport on roads accessible to the public, the vehicles are placarded in compliance with DOT regulations and manifested in compliance with WAC 173-303-180, as applicable.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 3.2]**

Description of Modification:

Page 3-7, Section 3.2, lines 41-49; and Page 3-8, lines 1-8:

Waste Handling, Storage, and Tracking at 305-B. Wastes received at 305-B are put into 14 ~~13~~ separate hazard classifications based on building and fire code restrictions for that type of facility:

1. Nonflammable RMW
2. Oxidizers
3. Acids, (organic and inorganic)
4. Poison
5. Caustics
6. Non-Regulated
7. Miscellaneous (Class 9 categories)
8. Washington State only waste (e.g., sodium chloride, sodium bicarbonate)
9. Compressed Gases (including aerosols)
10. Flammable Solids
11. Flammable and combustible liquids
12. Flammable and combustible RMW
13. TSCA wastes (PCB and asbestos) waste
14. Special Case wastes (organic peroxides, explosives, etc.)

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.2

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   2. Correction to typographical errors

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 3.2.5]**

Description of Modification:

Page 3-13, Section 3.2.5, lines 22-30:

3.2.5 Additional Requirements for Waste Generated Offsite [C-2e]

All wastes stored at 305-B are generated on the Hanford Site and/or by PNNL ~~PNL~~ research programs; in fact, most of the wastes stored in the unit are generated within the 300 Area. Additional requirements for wastes generated outside the 300 Area include proper manifesting (if appropriate) to 305-B and proper packaging for transport over public roadways. Although wastes generated outside of the 300 Area may be considered to be generated offsite since they are transported to 305-B on roads accessible to the public, they are under the same administrative controls as wastes which are generated onsite (i.e., in the 300 Area). There are no additional requirements, therefore, for wastes generated offsite.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1], 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1], if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 3.2.6]**

Description of Modification:

Page 3-13, Section 3.2.6, lines 32-40:

3.2.6 Additional Requirements for Ignitable, Reactive, or Incompatible Wastes [C-2f]

As described in Section 2.1, wastes stored at 305-B are divided into DOT hazard classes and stored in separate locations to ensure compatibility. The testing parameters identified in Table 3-2 are sufficient to properly identify the hazard class of unknown wastes and assure proper separation of incompatible wastes. The parameters in Table 3-2 are also appropriate to identify ignitable wastes to ensure that these wastes are stored in appropriate locations. The test parameters will also allow identification of those ignitable wastes which are also flammable wastes (i.e., flash point ≤141°F or 60.5°C ~~flash point less than 100°F or 38°C~~). Identification of flammable wastes is necessary since there are restrictions on the amount of flammable liquids that can be stored in 305-B.

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 4.1.1.1]**

Description of Modification:

Page 4-1, Section 4.1.1.1, lines 12-25:

4.1.1.1 Description of Containers [D-1a(1)]. Most wastes stored at the 305-B Storage Unit are received in their original, as-procured containers. Containers of hazardous materials entering 305-B are inspected before being accepted for storage. Generating units are responsible for placing the materials in adequate containers. Repackaged materials must be placed in containers that are new and compatible with the materials to be stored.

Containers in poor condition or inadequate for storage are not accepted at the unit. If transport is by unit personnel, such containers are not accepted for transport. See Section 6.4.1 for inspection prior to transport performed by unit personnel. "Container in poor condition or inadequate for storage" means a container which is not intact or undamaged and which is not securely sealed to prevent leakage during storage, transport and ultimate offsite disposal. Examples of acceptable packagings include laboratory reagent bottles, DOT containers, spray cans, sealed ampules, paint cans, leaking containers which have been overpacked, etc. Unit operations personnel have the authority to determine whether a container is in poor condition or inadequate for storage, using the criteria of WAC 173-303-190~~-190~~ and professional judgement whether the packaging may leak during handling, storage and/or disposal.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.2.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
2. Correction to typographical errors

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 4.1.1.2]**

Description of Modification:

Page 4-2, Section 4.1.1.2, lines 12-31:

Lab Packing. One of the major functions of the 305-B Storage Unit is the preparation of lab packs for offsite recycling, treatment and/or disposal of small quantity lab wastes generated by DOE-RL/PNNL activities.

Lab packs are prepared in compliance with WAC 173-303-161, 49 CFR 173.12, other applicable regulations, and permit conditions of the planned receiving facility (recycler, treatment facility, or disposal facility). Permit conditions affecting preparation of lab packs might include types of absorbent materials to be used (e.g., no vermiculite).

Lab packs are prepared in the storage cell containing the hazard class(es) to be placed in the lab pack. The elephant trunk ventilator system is used to minimize respirable dusts from the absorbent material being used (usually vermiculite ~~diatomaceous earth~~). Lab packs may also be prepared in the flammable liquid bulking module if appropriate; for instance, if compatible materials from more than one storage cell are being combined in a single lab pack drum. Lab packs may be prepared in the high bay storage area if storage of the completed lab pack is permitted there per Section 4.3.2.

Partial and completed lab packs are closed, labeled, and the contents list documented. Labpacks are stored in the cell from which the containers inside were drawn, or in the high bay if appropriate.

Unit personnel wear appropriate protective clothing while handling containers being placed in lab packs. At a minimum this includes labcoats, safety glasses or other protective eyewear, and chemical resistant gloves. More stringent requirements, including use of respiratory protection, may be imposed if appropriate.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair — Date	R. F. Christensen — 4/7/98 Date	Date

3/20/98

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 6.3.1.1]**

Description of Modification:

Page 6-9, Section 6.3.1.1, lines 22-42:

6.3.1.1 Internal Communications [F-3a(1)]. Internal communication systems are used to provide immediate emergency instruction to personnel in 305-B. Internal communications address general emergencies which may occur in the 300 Area as well as specific emergencies which may occur in 305-B.

Because of the nature of activities which occur in the 300 Area, the potential exists for emergencies outside of 305-B (e.g., release of radioactive materials) which could impact operations and staff in 305-B. For this reason, the general emergency signals for the 300 Area are applicable to 305-B. These signals are summarized in Table 6-1. Fire alarm signals are located in each building throughout the 300 Area. The nearest emergency siren for "area evacuation" and "take cover" is located 300 yards southeast of 305-B, on top of the 326 Building, and is audible in all parts of 305-B. Because fissile materials are not handled in 305-B, there is no criticality alarm for the unit.

Internal communications to provide emergency instruction in the event of an emergency in 305-B are fire alarms, public address (PA) system, and telephones. The fire alarms are to be used to provide notification for immediate evacuation of 305-B. Fire alarm pull boxes are located at all exits of the facility such that operating personnel have immediate access to one in all portions of 305-B. Four fire alarm bells are located within the 305-B and are audible at all locations within the building. The locations of the fire alarm bells are shown in Figure 6-4 and are as follows: (1) an office wing on the northeast hall; (2) an office wing next to the east entrance; (3) on the south wall of the basement; and (4) on the ~~northwest~~ northeast wall of the high bay. The PA system is to be used for building-wide broadcasting of verbal emergency instructions to 305-B staff. The PA system can be accessed from any unit telephone by dialing 6-1885. The PA system speakers are located in the high bay, in the basement, and in the office wing of 305-B.

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98	R. F. Christensen 4/7/98	Date
Date	Date	

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 6.3.1.3]**

Description of Modification:

Page 6-10, Section 6.3.1.3, lines 18-34:

6.3.1.3 Emergency Equipment [F-3a(3)]. Emergency equipment available for trained 305-B personnel includes portable fire extinguishers, a fire suppression system, spill response equipment, and decontamination equipment. Six portable 10-lb ABC fire extinguishers, one 15-lb (or larger) Class D fire extinguisher for combustible metals, and ~~two~~ one portable 14-lb Halon fire extinguishers are available at various locations throughout 305-B, as shown in Figure 6-4. The 10-lb ABC extinguishers are located: (1) next to the east entrance; (2) northwest end of the basement; (3) southwest end of the high bay; (4) outside of the bulking module door; (5) ~~north~~ south of Cell No. 4 entrance; and (6) north-west end of high bay. The 15-lb (or larger) class D extinguisher is located on the exterior of the organics cell wall ~~south~~ north of the entrance. The ~~two 14-lb~~ one Halon fire extinguishers ~~are~~ is located in the office area.

The facility is also equipped with an automatic fire suppression system consisting of galvanized steel, schedule 40 per ASTM A120 pipe and 150-lb malleable iron per ANSI B16.3 fittings. All components are UL-listed or FM-approved, and installation of the fire sprinkler system has been conducted in accordance with NFPA 13 for ordinary hazard. Spill cleanup supplies and equipment maintained are summarized in Table 6-2. Two emergency eye wash/showers are available for emergency personnel decontamination. The locations of the emergency eye wash/showers are shown in Figure 6-4. If needed, additional emergency equipment can be provided by the Hanford Fire Department. Emergency equipment available through the Hanford Fire Department for hazardous materials response is identified in Appendix 6A.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III [Section 7.4.1]**

Description of Modification:

Page 7-4, Section 7.4.1, lines:

Building Emergency Director (BED) (or alternate)

1. Notify the Single Point Contact if an evacuation is needed. EXCEPTION: If only 305-B needs to be evacuated, activate the fire alarm first, then notify the Single Point Contact.
2. Arrange for care of any injured employees, utilizing the Single Point Contact for notification of ambulance services.
3. Notify the Single Point Contact of any need to activate the 300 Area Emergency Control Center (ECC) described in the Sitewide Emergency Plan. Activation of the ECC should be done whenever technical assistance in evaluating a spill is required, when the emergency may affect other neighboring buildings, or when otherwise deemed necessary by the BED. See Section 7.5.5.
4. Provide for off-normal event notification in accordance with DOE Order 5000.3A, PNL-MA-11, and other established site procedures, within 30 minutes of discovery. (Normally this is done through the Single Point Contact.)
5. Provide details on incident to Environmental, Safety, & Health Directorate ~~Laboratory Safety~~ as they become available.

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
G. W. McNair 3/20/98 Date	R. F. Christensen 4/7/98 Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

THIS PAGE INTENTIONALLY
LEFT BLANK

Part III, Chapter 2

305-B Storage Facility

Page Changes

THIS PAGE INTENTIONALLY
LEFT BLANK

CONTENTS

FIGURES

2.0 FACILITY DESCRIPTION AND GENERAL PROVISIONS [B]

This chapter briefly describes the Hanford Site and provides a general overview of the 305-B unit, including:

- Topography
- Location information
- Traffic information
- Performance standards
- Buffer monitoring zones
- Spills and discharges
- Manifest system.

2.1 GENERAL DESCRIPTION [B-1]

This section provides a general description of the Hanford Site and the 305-B Storage Unit.

2.1.1 The Hanford Site

The Hanford Site consists of approximately 560 square miles (1450 square km) of semi-arid land that is owned by the U.S. Government and managed by DOE-RL. This site is located northwest of the City of Richland, Washington, along the Columbia River (Fig. 2-1). The City of Richland adjoins the southernmost portion of the Hanford Site boundary and is the nearest population center. In early 1943, the U.S. Army Corps of Engineers selected the Hanford Site as the location for reactor, chemical separation, and related facilities for the production and purification of plutonium. A total of eight graphite-moderated reactors using Columbia River water for once-through cooling were built along the river. These reactors were operated from 1944 to 1971.

N Reactor, a dual-purpose reactor for production of plutonium and generation of byproduct steam for production of electricity, uses recirculating water coolant. N Reactor began operating in 1963 and was placed in permanent shutdown status in 1991.

Activities are centralized in numerically designated areas on the Hanford Site. The reactor facilities (active and decommissioned) are located along the Columbia River in the 100 Areas. The reactor fuel processing and waste management facilities are located in the 200 Areas, situated on a plateau about 7 miles (11.2 km) from the river. The 300 Area, located north of Richland, contains mostly reactor fuel manufacturing facilities and research and development laboratories. The 400 Area, 5 miles (8 km) northwest of the 300 Area, contains the Fast Flux Test facility. The 1100 Area, north of Richland, contains buildings associated with maintenance and transportation functions for the Hanford Site. Administrative buildings and other research and development laboratories are found in the Richland North Area (RCHN). Administrative buildings are also located in the 700 Area in downtown Richland.

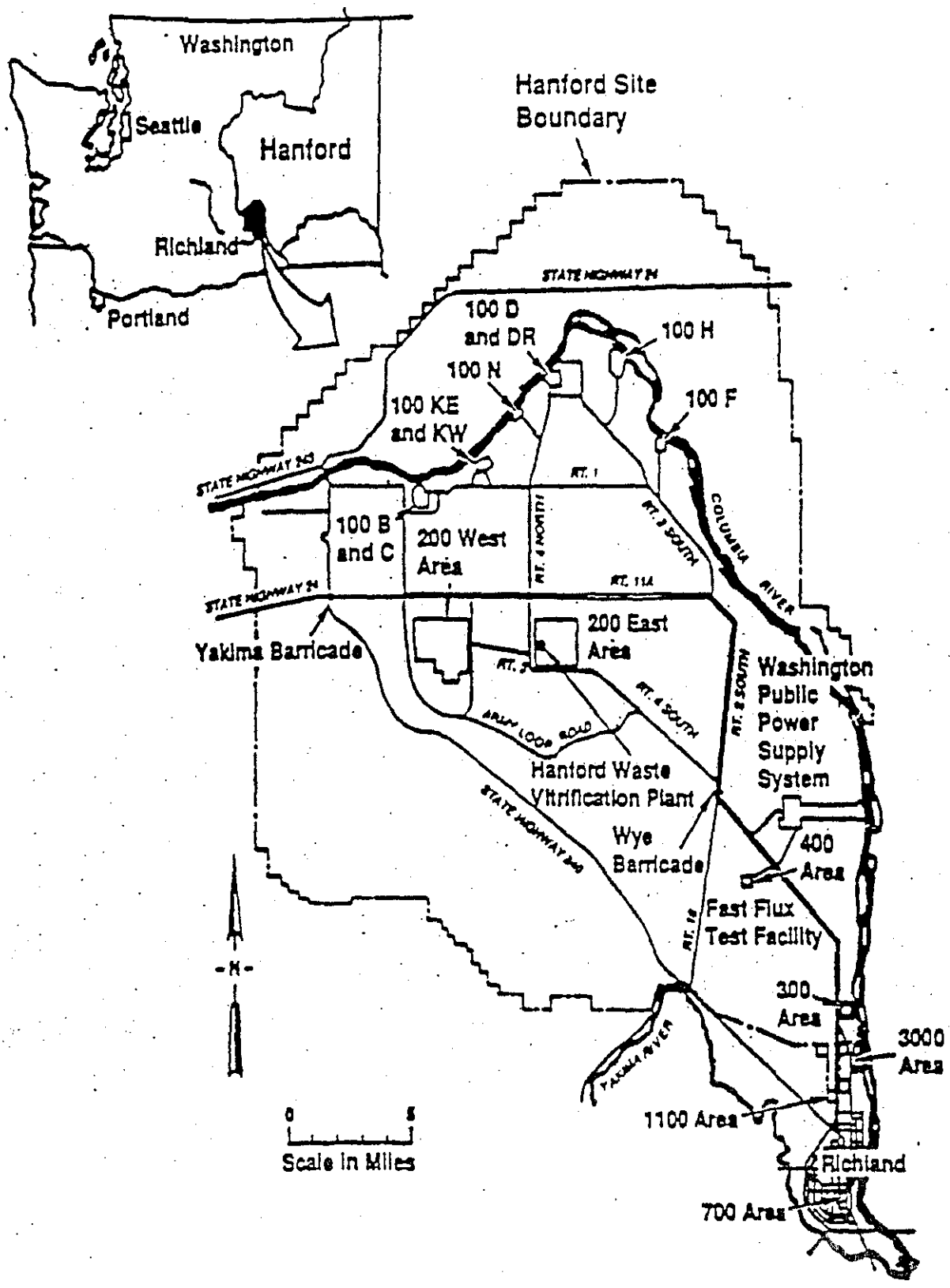


Figure 2-1. Hanford Site Location.

2.1.2 The 305-B Storage Unit

The 305-B Storage Unit is a dangerous waste and RMW storage unit owned and operated by DOE and co-operated by PNNL. The unit is used for the collection, consolidation, packaging, storage, and preparation for transport and disposal of both dangerous waste and RMW. It is an integral part of the Hanford Site's waste management system.

The 305-B unit is a one-story frame and masonry building with basement constructed in the early 1950s, with an attached two-story-high metal and concrete building constructed in January 1978, referred to in this document as the "high bay." The unit is located within the 300 Area, as shown in Figure 2-2, and was formerly used for engineering research and development. Unit upgrades were completed in 1988 to meet requirements for storage of dangerous waste and RMW. Waste storage under interim status began in March 1989.

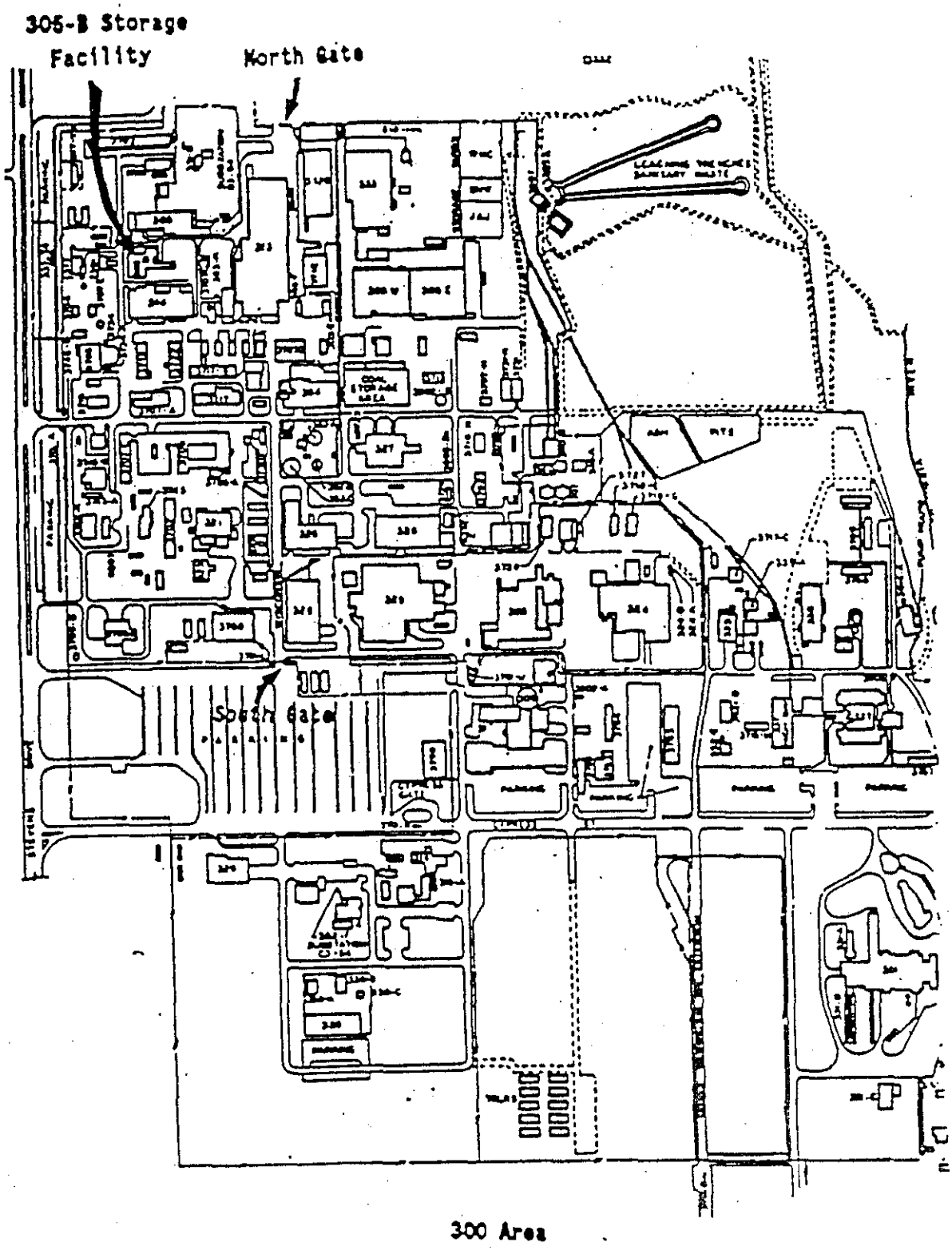
A variety of small volume chemical wastes are generated by PNNL's research laboratory activities under contract to DOE. These wastes are brought to the 305-B unit and segregated by compatibility for storage in the unit until enough waste is accumulated to fill a labpack or bulking container, usually a 30- to 55-gallon drum. When a sufficient number of shipping containers of waste has accumulated, they are manifested for shipment, generally to permitted off-site recycling, treatment or disposal facilities.

Dangerous wastes are stored in the high bay. The high bay has been equipped with a secondary containment system to facilitate storage of containerized wastes. In addition, four storage "cells" have been constructed within the high bay area for segregated storage of incompatible waste streams. Each of the cells is approximately 14' x 14', enclosed by 4' high concrete block walls; each cell has its own separate secondary containment system. Drum-quantity storage for incompatible wastes has also been provided in separate areas in the southeast corner of the high bay.

Radioactive mixed waste (RMW) is stored in the basement of the original wing of the building in an area approximately 18' x 32'. The RMW area is also equipped with a secondary containment berm to prevent migration of spilled wastes. Flammable RMW cannot be stored below grade (per Uniform Fire Code) and is stored in an independent area on the first floor of the original wing in individual secondary containment structures.

The 305-B unit is equipped with a heating, ventilation and air conditioning (HVAC) system to provide relatively constant temperatures during storage of dangerous wastes. The first floor of the older building and the high bay are served by a dual-compressor heat pump system for both heating and air conditioning. The basement area is served by a separate electric heating and evaporative cooling combined system. These systems, detailed in Plates 4-10 through 4-14 of Appendix 4A, are adequate to maintain interior temperatures in the range of 50-85°F during normal ambient temperatures of 10-110°F.

1



2

Figure 2-2. Location of 305-B Storage Unit.

2.4 TRAFFIC INFORMATION [B-4]

The DOE-controlled Hanford Site is traversed by numerous primary and secondary roads as shown by Figure 2-6. The DOE roadways inside the site, except for Routes 4S and 10 south of the Wye Barricade, are restricted to authorized personnel and cannot be accessed by the general public. The majority of the site traffic consists of light duty vehicles and buses used to transport employees to various operation sites within the Hanford boundary. Primary routes include Routes 4S, 10, 4N, 2N, 1, 6, 11A, as well as various avenues within the site boundary. The primary routes are constructed of bituminous asphalt (usually 2 in. thick, but the thickness of the asphalt layer will vary with each road) with an underlying aggregate base in accordance with U.S. Department of Transportation (DOT) requirements. The secondary routes are constructed of layers of an oil and rock mixture with an underlying aggregate base. The aggregate base consists of various types and sizes of rock found on site. Currently, no load-bearing capacities of these roads are available; however, loads as large as 140 pounds per square in. have been transported without observable damage to road surfaces.

Access to the 300 Area by vehicular traffic is by Stevens Drive and George Washington Way. Traffic on Stevens Drive consists of personal vehicles for the transport of personnel to and from work, and light duty trucks for the transport of materials. Traffic on George Washington Way consists almost exclusively of personal vehicles.

Wastes generated at other onsite facilities outside the 300 Area are transported over Government-maintained roads as shown in Figure 2-6. These roads are accessible to the general public only south of the Wye Barricade as shown in the figure. In addition, waste shipments from 305-B to offsite treatment, disposal or recycling facilities are generally shipped over publicly accessible roads enroute to the consignee.

Wastes generated at laboratories within the 300 Area are transported to 305-B principally over roads which are not accessible to the general public. All access to the 300 Area (except the outer parking lot) is controlled by DOE and limited to site personnel holding appropriate clearances. In the immediate area of the 305-B unit, vehicular traffic is limited to vehicles on official business. Traffic destined for the 305-B unit travels over roads designed to handle truck traffic. Traffic in and out of the unit averages 1-5 vehicles per day. Traffic destined for adjacent facilities averages 10-15 vehicles per day and ranges from passenger cars to heavy trucks. All roads within the 300 Area are paved, all-weather roads. There are no traffic signals within the 300 Area.

2.5 PERFORMANCE STANDARD [B-5]

The 305-B Storage Unit was designed to minimize the exposure of personnel to dangerous wastes and hazardous substances and to prevent dangerous wastes and hazardous substances from reaching the environment.

In addition, measures are taken to ensure that 305-B is maintained and operated, to the maximum extent practicable given the limits of technology, in a manner that prevents:

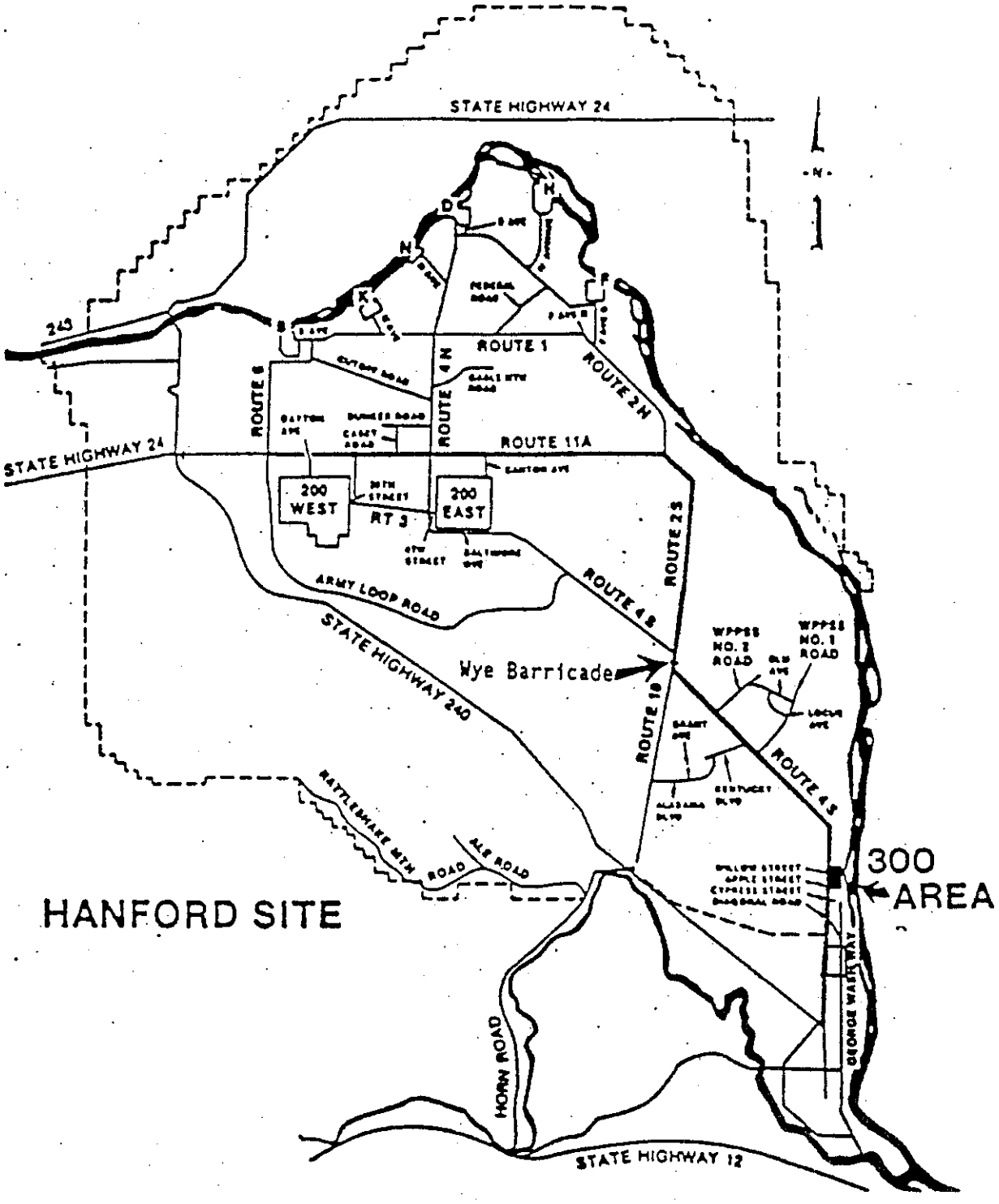


Figure 2-6. Hanford Site Primary and Secondary Roads.

- Degradation of groundwater quality
- Degradation of air quality by open burning or other activities
- Degradation of surface water quality
- Destruction or impairment of flora or fauna outside of the facility
- Excessive noise
- Negative aesthetic impacts
- Unstable hillsides or soils
- Use of processes that do not treat, detoxify, recycle, reclaim, and recover waste material to the extent economically feasible
- Endangerment to the health of employees or the public near the facility.

The measures taken to prevent each of the above negative effects from occurring are described in the following sections.

2.5.1 Measures to Prevent Degradation of Groundwater Quality

Degradation of groundwater quality is prevented by storing waste containers within an enclosed building with a sealed concrete floor. All drains and sumps in areas where wastes are stored are blocked to prevent release of spilled material to the environment. The 305-B accepts only those packages meeting applicable DOT requirements. Opening of containers is done only in areas with spill containment. Design and administrative controls significantly reduce the possibility of release of dangerous waste to the environment through soil or groundwater contamination.

2.5.2 Measures to Prevent Degradation of Air Quality by Open Burning or Other Activities

No open burning occurs at 305-B. There is no vegetation around 305-B and the area around the facility is paved or graveled, thereby reducing the risk of fire or wind erosion. Combustible and flammable waste is packaged in a manner that reduces the potential for fire.

2.5.3 Measures to Prevent Degradation of Surface Water Quality

The potential for degradation of surface water quality is extremely low, due to the manner in which the facility is designed and operated. All waste handling activities (i.e., loading/unloading, container opening, waste transfer) presenting the opportunity for spills are conducted inside the unit. All exits from storage areas of 305-B are equipped with spill collection sumps to prevent spilled material from escaping.

2.5.4 Measures to Prevent Destruction of Impairment of Flora or Fauna Outside of the Facility

305-B is located within the 300 Area. The 300 Area is highly developed and areas not occupied by buildings are generally paved or graveled. As a result, flora or fauna are generally absent within the 300 Area except for several grassed areas. Measures to prevent destruction or impairment of flora or fauna outside the 300 Area are the same as those to prevent releases from the unit (i.e., all waste handling is performed within an enclosed area having spill collection sumps).

2.5.5 Measures to Prevent Excessive Noise

During normal operations at 305-B excessive noise is not generated. The major sources of noise are waste transport and handling equipment (i.e., forklifts, light vehicles). The noise generated at 305-B is compatible with the types of activities generated at neighboring facilities in the 300 Area.

2.5.6 Measures to Prevent Negative Aesthetic Impacts

305-B does not injure or destroy the surrounding flora and fauna. The facility stores waste in approved DOT containers within the confines of the structure. The building's appearance is similar to neighboring facilities. For these reasons, the facility presents no negative aesthetic impacts.

2.5.7 Measures to Prevent Unstable Hillsides or Soils

There are no naturally unstable hillsides near 305-B. The soil beneath and around the facility was compacted prior to construction.

2.5.8 Measures to Prevent the Use of Processes That Do Not Treat, Detoxify, Recycle, Reclaim, and Recover Waste Material to the Extent Economically Feasible

The 305-B unit was established, in part, to enhance DOE's and PNNL's efforts to eliminate or minimize dangerous waste generation, and to treat, detoxify, recycle, reclaim and recover waste materials. A full description of the efforts being undertaken at the 305-B unit to eliminate or minimize waste generation is presented in Chapter 10 of this application.

Offsite waste management options for dangerous wastes being shipped from the 305-B unit are evaluated according to the following order of preference:

1. Recycling, including solvent reprocessing, oil recycling, metals recovery, burning for energy recovery, etc.
2. Treatment, including incineration, volume and/or toxicity reduction, chemical destruction, etc.
3. Land disposal is viewed as a least favored option and is generally only used for treatment residues, spill cleanup residues, or when treatment is not feasible.

When permitted by law and/or contractual obligations, 305-B staff try to use this hierarchy without regard to minor variations in cost, e.g. if recycling is available but slightly more expensive than land disposal, recycling is utilized.

2.5.9 Measures to Prevent Endangerment to the Health of Employees or the Public Near the Facility

305-B is within the 300 Area, which is located approximately 1 mile north of the corporate limits of the City of Richland. Public entry to the 300 Area is not allowed; members of the public, therefore, cannot enter 305-B. Exposure of members of the public or employees to dangerous and mixed waste constituents is prevented through administrative controls over the designation, packaging, loading, transporting, and storing of the wastes received at 305-B. In addition, physical controls exist (i.e., spill collection sumps) to prevent release of wastes or waste constituents in the event of a spill.

Employees are trained to handle and store waste packages (Chapter 8.0). The training includes dangerous waste awareness, emergency response, and workplace safety. Protective equipment, safety data, and hazardous materials information are supplied by operations management and are readily available for employee use.

A contingency plan, including emergency response procedures, is in place and is implemented for spill prevention, containment, and countermeasures to reduce safety and health hazards to employees, the environment, and the public. The contingency plan is described in Chapter 7.0.

2.6 BUFFER MONITORING ZONES [B-6]

Buffer and monitoring zones around 305-B are described in the following sections.

2.6.1 Ignitable or Reactive Waste Buffer Zone [B-6a]

Ignitable and reactive wastes are stored in 305-B in compliance with the requirements of the 1991 Uniform Fire Code, Article 79, Division II (International Conference of Building Officials 1991). Quantity limits for storage are established to comply with requirements for Class B occupancy. Structures surrounding 305-B are laboratory and office buildings which are occupied during normal working hours. The nearest adjacent facility is the 314 Building, which is approximately 30 ft south of 305-B. The closest 300 Area boundary is the western boundary, which is approximately 250 ft west of 305-B.

2.6.2 Reactive Waste Buffer Zone [B-6b]

Storage of certain reactive wastes listed in WAC 173-303-630(8)(a) is done at 305-B. These wastes have special storage requirements more stringent than those shown in Section 2.6.1. They are stored in accordance with this section and with the Uniform Building Code's Table 77.201, latest edition. The 1988 edition requires buffer zones in Class B occupancies of 44 inches for storage of such wastes, and the storage locations in 305-B reflecting appropriate buffer zones are noted in Figure 4-1. These wastes are only occasionally stored at the unit depending on generation by individual research projects.

The occupancy storage limitations imposed by UBC for class B occupancy are as follows:

- Explosives: 1 lb
- Organic Peroxide, unclassified, detonatable: 1 lb
- Pyrophoric: 4 lbs
- Unstable (reactive), Class 4: 1 lb

These limits are allowed to be doubled when stored in flammable storage cabinets, as is done at 305-B; hence, the practical storage limits at 305-B are double those shown here.

2.6.3 Travel Time [B-6c]

Operation of 305-B does not involve the placement of waste in dangerous waste surface impoundments, piles, landfarms, or landfills. Therefore, the requirement that the travel time from the active portion of the unit to the nearest downstream well or surface water used for drinking purposes be at least three years for dangerous waste and 10 years for extremely hazardous waste does not apply.

2.6.4 Dangerous Waste Monitoring Zone [B-6d]

Operation of 305-B does not involve the placement of waste in dangerous waste surface impoundments, waste piles, land treatment, or landfill areas. Therefore, a dangerous waste monitoring zone is not required.

2.6.5 Extremely Hazardous Waste Monitoring Zone [B-6e]

Operation of the 305-B does not involve the placement of waste in dangerous waste surface impoundments, waste piles, land treatment, or landfill areas. Therefore, an extremely hazardous waste monitoring zone is not required.

2.7 SPILLS AND DISCHARGES INTO THE ENVIRONMENT [B-7]

The procedures that are followed to ensure immediate response to a nonpermitted spill or discharge of nonradioactive dangerous wastes or hazardous substances from 305-B to the environment, and the immediate notification of authorities are discussed in Chapter 7.0. As a convenience, checklist items listed below are cross-referenced to the appropriate section or sections of Chapter 7.0.

2.7.1 Notification [B-7a]

Information regarding notifications made to authorities in the event of a nonpermitted spill or discharge of hazardous substances into the environment is included in Section 7.4.1.

2.7.2 Mitigation and Control [B-7b]

Actions taken to protect human health and the environment in the event of a nonpermitted spill or discharge are discussed in Sections 7.4.2 through 7.4.8. Additional information describing the responses to container spills or leaks is included in Section 7.4.9.

proper containerization of waste. If discrepancies are noted during the inspection, the waste will not be picked up by the Waste Management Section. Typical discrepancies include waste not as described on request form or lack of supporting data to verify waste characteristics. In such cases, deficiencies will be explained to the generating unit responsible person, who will then be responsible for correcting them.

If the waste is found to be acceptable for transport, Waste Management staff will check to ensure required labels are in place, and transport (or arrange for transport of) the waste to 305-B. If transport will be over public roadways or highways, a Uniform Hazardous Waste Manifest will be prepared identifying PNNL as the transporter and 305-B as the receiving TSD unit. A copy of all such manifests is returned to the generating unit within 30 days of receipt at 305-B. A copy of the manifest is also retained at 305-B.

2.8.2 Response to Significant Discrepancies [B-8b]

Waste shipments received at the 305-B unit containing manifest discrepancies are not accepted unless the discrepancy or discrepancies can be resolved with the generating unit at the time the shipment is received. Manifest discrepancies requiring such resolution include:

- Variations exceeding 10% in weight for bulk shipments such as tank trucks or tank cars (generally not applicable to 305-B since most shipments are in drums or other containers);
- Any inaccuracy in piece counts in containerized shipments (underages or overages);
- Type mismatches (i.e., the waste is not as described on the request form; obvious inaccuracies such as waste acid substituted for waste solvent).

Manifest information will also be considered incorrect if the written description of wastes does not agree with visual observations, or if observed weights or volumes differ by more than 10 percent from those described on the manifest.

If a discrepancy is noted, the generating unit will be contacted immediately. The waste will not be accepted for storage until the discrepancy is resolved. The generating unit will be asked to identify the source of the discrepancy (e.g. error in estimating volume or weight, incorrect identification of waste, etc.) Once the cause of the discrepancy is identified, and the generating unit and the waste management organization have concurred as to resolution of the discrepancy, the manifest will be corrected. Corrections will be made by drawing a single line through the incorrect entry and entering the correct information. Corrected entries will be initialed and dated by the individual making the correction. Once the manifest has been corrected, the discrepancy will be considered resolved.

Certain manifest discrepancies may be discovered after receipt, such as analytical data indicating incorrect designation which may result in incorrect naming of the shipment on the manifest. Such discrepancies will be managed as noted above; if, however, the discrepancy cannot be resolved within 15 days of receipt of the shipment, the 305-B unit will file the report required by WAC 173-303-370(4)(b) as described in Section 12.4.1.1.1.

2.8.3 Provisions for Nonacceptance of Shipment [B-8c]

Provisions for nonacceptance of shipments are discussed in the following sections.

2.8.3.1 Nonacceptance of Undamaged Shipment [B-8c(1)]. As described in Section 2.8.1, all wastes are inspected by staff from the waste management organization prior to shipment and are also transported to 305-B by waste management organization staff. This procedure is designed to prevent receipt of nonacceptable wastes. Waste management organization staff will refuse to accept or transport wastes which are nonacceptable at 305-B.

2.8.3.2 Activation of Contingency Plan for Damaged Shipment [B-8c(2)]. As described in Section 2.8.1, all wastes are inspected by staff from the waste management organization prior to shipment and are also primarily transported to 305-B by waste management organization staff. Damaged containers will not be accepted from the generator and will not be transported. The only opportunity for receipt of damaged containers, therefore, would be if containers were damaged during transportation. If a shipment of waste is damaged during transportation and arrives in a condition as to present a hazard to public health or to the environment, the facility contingency plan will be implemented as described in Chapter 7.0.

2.8.4 Unmanifested Waste

Waste generated within the Hanford Site is not transported over public highways and is not subject to manifest requirements under WAC 173-303. Such waste may be received at the 305-B unit without a manifest. However, all wastes (including unmanifested waste) must be accompanied by a a completed and approved CDRR form (Figure 2-8).

If transport is by public roadways or highways, a manifest must be used as noted in Section 2.8.1. Shipments requiring a manifest and not having one will either be rejected or, at the sole discretion of the unit operator, the unit will accept the waste and file an unmanifested waste report as described in WAC 173-303-390(1) and detailed in Section 12.4.1.1.2.

Battelle

CHEMICAL DISPOSAL/RECYCLE REQUEST

Received/Approved ______
Request No. ______
Picked Up/Labeled ______
Entered ______
Copied ______

Send Completed Form to:

- 300 Area Nonradioactive Materials: 1A Vanderlloogt 378-0272, P8-45
- 3000 Area Nonradioactive Materials: M. Carlson 375-2850, P7-68
- Radioactive Mixed Waste: Kll Selby 378-7233, P8-45

☐ 1830
☐ 1831

Org. Code:

Work Package No.:

Level 3 Manager Signature/Date:

Technical Contact/Phone No. (if other than Requester)

☐ < 90 Day Accumulation
☐ Satellite Accumulation

Accumulation Date for < 90 Day Waste (< 30 days for PCB's)

Requested by (printed or typed name):

Telephone No.

Requester Signature/Date (Certifies Accuracy of Information)

Location of Waste:

Requester MSIN:

☐ Non Radioactive Material; ☐ Radioactive Material (Include Curies Quantities Below)

SHADED AREA FOR WM&EC USE ONLY

Complete ALL Applicable Information: Detailed Instructions on Reverse, Continuation Sheets Available

Container ID WM & EC No.	Container Quant.	Container Size	Material Quantity (in Kg only)	Container Type	Material Description or Trade Name (a)	Chemical Component (use proper chemical name include isotopes and curies for RMW) (b)	Wt. % (c)	Physical State S/L/G (d)	Hazards (e)	Status (f)	WM & EC Codes

1

Figure 2-8. Example Chemical Disposal/Recycle Request Form.

Chemical Disposal/Recycle Request (CDRR) Instructions

General Instructions:

- Type or print neatly, fill out ALL blanks correctly and completely.
- Do not write in shaded areas. These are for WM&EC use only.
- A work package number needs to be included for all 1831 (private) waste and as requested for other special cases (e.g., compressed gas cylinders, lecture bottles, etc.).
- Do not fill in an accumulation date if the waste is in a satellite accumulation area.
- Do not include both satellite accumulation wastes and, 90 day wastes on the same CDRR form. Use separate forms.
- Do not include both 1830 and 1831 wastes on the same CDRR form.
- Do not include both nonradioactive chemical wastes and radioactive mixed waste on the same CDRR form.
- Do not include both 300 and 3000 Areas wastes on the same CDRR form.
- For any materials analyzed, please attach a copy of the analytical report.
- Please feel free to use several lines per item as necessary to include any important information on the material.

Specific CDRR Instructions:

(a) Provide a complete description of the material for disposal. For trade name items, attach a material safety data sheet (MSDS). For items analyzed, attach a copy of the analysis. Also include any additional information on material or process if any (e.g., CAS number, RTEC number.)

(b) Provide all known chemical components; use proper accepted names (e.g., ethyl acohol is acceptable; abbreviations or formulas are not).

(c) Enter weight percent for all known chemical components; this must add up to 100% for each item, unless the information is proprietary (as indicated on an attached MSDS). Trace amounts of metals, cyanides, sulfides, PCBs, phenolics, and other highly toxic materials must be specified.

(d) Please indicate physical state of material: S=Solid, L=Liquid, G=Gas.

(e) Please enter hazards from codes shown below; also, for corrosive material include the pH, for flammable materials include the flashpoint (FP).

Hazard Codes

C=Corrosive	T=Toxic	E=Explosive
EP= EP Toxic	O=Oxidizer	F=Flammable
R=Reactive (with water or air)		

(f) Please enter container/material from codes shown below (state all that apply):

F= Full	MT=empty	TR= triple rinsed	O= old
N= new (unused material)		S= spill material	PF= partially full

R= recyclable condition (unopened, or opened but in excellent condition)

Requirements for Material Pickup by WM&EC:

In order to facilitate material pickup by WM&EC, please do the following:

- Complete ALL required information on the CDRR form.
- Ensure that all materials are in screw-cap glass, metal, or plastic containers that are compatible with the waste (sealed containers which the material originally came in are acceptable, (e.g., glass ampules or metal paint cans). Ground glass, rubber stoppers, or taped seals will not be accepted.
- Have a chemical waste certification filled out and signed by a PNL Radiation Protection Technologist showing that the material has been surveyed and released (1 to 2 days prior to scheduled pickup).
- Each individual container must have marking or labeling on them that clearly identify 100% of their contents and their chemical hazards (if container is too small to label with all constituents please attach a tag or other listing).
- If you have questions, please refer to PNL-MA-8, "Waste management and Environmental Compliance". For hazardous waste issues and PNL-MA-43, "Health and Safety Management," for chemical hazard labeling requirements.

Figure 2-9. Example Chemical Disposal/Recycle Request Form (Reverse).

CONTENTS

TABLES

This page intentionally left blank.

3.0 WASTE CHARACTERISTICS [C]

305-B receives a wide variety of dangerous waste and limited quantities of RMW. This variety results from the nature of the activities generating the wastes, namely research and development. This chapter describes the characteristics of the wastes received at 305-B, and presents the waste analysis plan used to characterize these wastes to ensure proper management.

3.1 CHEMICAL, BIOLOGICAL, AND PHYSICAL ANALYSIS [C-1]

The dangerous waste and RMW stored at 305-B can be categorized as originating from five basic sources:

- Waste from nonspecific sources
- Discarded commercial chemical products
- Waste from research activities using radioactive isotopes
- Waste from chemicals synthesized or created in research laboratories
- Discarded commercial products exhibiting dangerous waste characteristics and/or criteria.

Each of these waste categories is discussed below, including waste descriptions, hazard characteristics, and bases for hazard designations. This information includes that which must be known to treat, store, or dispose of the wastes, as required under WAC 173-303-806(4)(a)(ii).

Wastes from Nonspecific Sources. Wastes from nonspecific sources consist of those listed wastes identified in WAC 173-303-9904. The Part A permit application for 305-B identifies the following wastes from this category with their estimated annual management quantities:

- F001 - Spent halogenated degreasing solvents and sludges (2,000 kg/yr)
- F002 - Spent halogenated solvents and still bottoms (2,000 kg/yr)
- F003 - Spent nonhalogenated solvents and still bottoms (5,000 kg/yr)
- F004 - Spent nonhalogenated solvents and still bottoms (1,000 kg/yr)
- F005 - Spent nonhalogenated solvents and still bottoms (5,000 kg/yr)
- F027 - Discarded polychlorinated phenol formulations (200 kg/yr).

These halogenated and nonhalogenated solvents are in the form of spent solvents; no still bottoms are generated. Degreasing solvents (F001), as well as spent halogenated solvents (F002), are used primarily in research although some commercial applications do exist (e.g., printing, duplicating). Spent non-halogenated solvents (F003, F004, and F005) also come primarily from research laboratories, although a significant amount of methyl ethyl ketone (F005) is generated through maintenance applications such as the Craft Services paint shop (350 Building). Manufacturing activities are not performed at Hanford; therefore, dangerous wastes from specific sources (WAC 173-303-9904 "K" Wastes) are not generated.

Wastes in this category (F Wastes) are generally received at 305-B in 1-gal and 5-gal flammable liquid safety cans ("flash cans"). Methyl ethyl ketone, which is received in 55-gal drums, is an exception.

Wastes in this category are designated on the basis of the generator's knowledge (i.e., information from container labels or material safety data sheets), or by sampling. Sampling is performed if the generating unit does not have information to document the composition and characteristics of the waste. The waste generator is responsible for specifying the characteristics of the waste on the basis of knowledge of the chemical products used (i.e., information supplied by the

manufacturer) and the process generating the waste. These listed wastes are all designated as dangerous waste (DW) unless the generator determines through process knowledge (i.e., knowledge of materials used and concentrations used) that wastes F001 or F002 contain greater than 1% halogenated hydrocarbons. Wastes with greater than 1% halogenated hydrocarbons are designated as extremely hazardous waste (EHW). Wastes F001 through F005 are also designated as land disposal restricted (LDR) wastes under 40 CFR 268.30 (solvent wastes). Waste F027 is designated as an LDR waste under 40 CFR 268.31 (dioxin-containing waste).

Discarded Chemical Products. Discarded chemical products consist of those products listed in WAC 173-303-081. The Part A permit application for 305-B identifies all of the discarded chemical products listed in WAC 173-303-9903 (P001 through P123 and U001 through U359) and specifies an estimated maximum annual management quantity, based on prior experience, of 200 kg/yr for each of these wastes. Only a few of these wastes are typically generated at any one time. The Part A permit application listed all of these wastes, however, because the wide variety of research activities conducted at Hanford presents the potential to generate any of these wastes.

These wastes (P Wastes and U Wastes) are typically received at 305-B in the manufacturer's original container. Approximately 70% of these wastes are in partially full, opened containers and the remaining 30% are in sealed, unopened containers. These containers typically consist of glass and polyethylene jars or bottles and metal cans having a volume equal to or less than 4 L.

Wastes in this category are designated on the basis of the generator's knowledge. As these wastes are usually in original containers, information on the container label is verified by generator knowledge (i.e., knowledge that material is in its original container) and is used to identify contents. Wastes in "as procured" containers (i.e., original container with intact label) are not sampled. These listed wastes contain those designated as DW as well as those designated as EHW. These wastes are also subject to LDR regulations under 40 CFR 268, including disposal prohibitions and treatment standards.

Wastes from Research Activities Using Radioactive Isotopes. Dangerous wastes from research activities using radioactive isotopes are RMW. These wastes are generated in laboratories performing chemical and physical research, and consist primarily of radiologically contaminated chemicals or lead stacked in sealed 55-gal drums. These wastes are designated on the basis of the generator's knowledge or on the basis of sampling and analysis. The generator's knowledge is used if the generator has kept accurate records of the identities and concentrations of constituents present in the waste. For example, many generating units keep log sheets for accumulation containers in satellite areas to keep a record of waste constituents. If information available from the generator is inadequate for waste designation, the wastes are sampled (as described in Section 3.2) and the results of the analysis are used for designation. These wastes include those designated as dangerous waste mixtures under WAC 173-303-084 and also those designated as characteristic dangerous wastes under WAC 173-303-090. The Part A permit application for 305-B includes all categories of toxic, persistent, and carcinogenic waste mixtures (i.e., both DW and EHW). While not all of these wastes are currently generated or have been generated, the wide variety of research activities conducted at Hanford presents the potential that these wastes could be generated and require subsequent management at 305-B. Similarly, the Part A permit application includes the characteristic dangerous waste categories D001 through D043 (i.e., ignitable, corrosive, reactive, and TCLP toxic due to metals or organics content).

Flammables (i.e., flash point less than 100° Fahrenheit) will not be stored in the below-grade RMW cell; however, ignitables (D001 due to oxidizer content) will be stored in this cell. Flammable RMW is not stored below grade due to Fire Code restrictions. These wastes are stored above the RMW cell in a flammable storage locker. The flammable RMW locker is equipped with secondary containment to provide greater than 100% secondary containment volume.

The wastes in this category could include those designated as either DW or EHW. These wastes could also be federal LDR wastes regulated under 40 CFR 268 as well as state LDR wastes regulated under WAC 173-303-140 (e.g., leachable inorganic wastes).

Waste from Chemicals Synthesized or Created in Research Laboratories. Wastes from chemicals synthesized or created in research laboratories typically consist of organics in quantities of 100 g or less, received in small containers.

These wastes are designated on the basis of the generator's knowledge or on the basis of sampling and analysis. The generator's knowledge is used if the generating unit has kept accurate records of the identities and concentrations of constituents present in the waste (e.g., log sheets for accumulation containers). If information available from the generating unit is inadequate for waste designation, the wastes are sampled (as described in Section 3.2) and the results of the analysis are used for designation. These wastes include those designated as dangerous waste mixtures under WAC 173-303-084 and also those designated as characteristic dangerous wastes under WAC 173-303-090. The Part A permit application for 305-B includes all categories of toxic, persistent, and carcinogenic waste mixtures (i.e., both DW and EHW). While not all of these wastes are currently generated or have been generated, the wide variety of research activities conducted at Hanford presents the potential that these wastes could be generated and require subsequent management at 305-B.

The wastes in this category could include those designated as either DW or EHW. These wastes could also be federal LDR wastes regulated under 40 CFR 268 as well as state LDR wastes regulated under WAC 173-303-140 (e.g., organic/carbonaceous wastes).

Discarded Commercial Products Exhibiting Dangerous Waste Characteristics and/or Criteria. Many discarded chemical products handled in 305-B are not listed in WAC 173-303-9903 and are still considered dangerous waste since they exhibit at least one dangerous waste characteristic and/or criterion (WAC 173-303-090 and WAC 173-303-084). These wastes are included with those listed in the Part A permit application under waste codes D001 through D043, WT01, WT02, WP01, WP02, WP03, WC01, and WC02. These wastes are typically received at 305-B in the manufacturer's original container. Approximately 70% of the wastes are in partially full, opened containers; the remaining 30% are in sealed, unopened containers for which no local recycle/reuse options can be identified. These containers typically consist of glass and polyethylene jars or bottles and metal cans having a maximum volume of 4 L.

Wastes in this category are designated based on the generator's knowledge. As these wastes are usually in their original containers, information on the container label is verified by the generator's knowledge and is used to identify the contents. These wastes contain those designated as DW as well as those designated as EHW. These wastes could also be federal LDR wastes regulated under 40 CFR 268 as well as state LDR wastes regulated under WAC 173-303-140 (e.g., organic/carbonaceous wastes, leachable inorganic wastes).

3.1.1 Containerized Wastes [C-1a]

The container storage areas at 305-B meet the containment system requirements of WAC 173-303-630(7)(c). Testing or documentation that the dangerous wastes stored at 305-B do not contain free liquids is not required.

3.1.2 Waste in Tank Systems [C-1b]

This section does not apply to the 305-B Storage Unit because wastes are not stored in tanks.

3.1.3 Waste in Piles [C-1c]

This section does not apply to the 305-B Storage Unit because wastes are not stored in piles.

3.1.4 Landfilled Wastes [C-1d]

This section does not apply to the 305-B Storage Unit because wastes are not placed in landfills.

3.1.5 Wastes Incinerated and Wastes Used in Performance Tests [C-1e]

This section does not apply to the 305-B Storage Unit because wastes are not incinerated.

3.1.6 Wastes to be Land Treated [C-1f]

This section does not apply to the 305-B Storage Unit because wastes do not undergo land treatment.

3.2 WASTE ANALYSIS PLAN [C-2]

This section describes the procedures used to obtain the information necessary to manage wastes in accordance with the requirements of WAC 173-303 (Ecology 1989). This section is intended to correlate with the Waste Analysis Plan submitted in the Hanford Facility Permit Application (DOE/RL-91-28). If that plan is modified, this plan will be modified to reflect those changes.

Most of the information necessary to manage wastes at 305-B is obtained from generating units without the need to perform detailed chemical, physical, and biological analysis. This approach is used for the following reasons:

- All wastes stored at 305-B are generated on the Hanford Site and/or by PNNL research programs; effective administrative control can be maintained over individual waste generating units (i.e., the same organization generates the wastes and operates the storage unit)

- Most of the wastes stored at 305-B are discarded chemical products for which knowledge of waste characteristics is available without further analysis

- Many of the wastes stored at 305-B result from research activities which are carefully controlled and documented; this documentation includes information on chemical constituents.

Information provided by waste generating units is verified before wastes are accepted for transport to 305-B (e.g., wastes are inspected to verify that they are as described in the disposal request). Generating units are not required to sample wastes unless they have inadequate documentation of waste characteristics. Verification sampling of wastes to be shipped offsite from 305-B is required by the disposal contractor and is performed by the contractor.

Because of the importance of administrative controls for the purposes of waste analysis, procedures for management of wastes from the time of generation through storage at 305-B are described below. These procedures demonstrate how sufficient knowledge is obtained from generating units to properly manage dangerous and mixed wastes at 305-B. In the event that such knowledge is not available, sampling and analysis is required by 305-B procedures prior to shipment to the storage unit. Detailed information related to sampling and analysis is presented in Sections 3.2.1 through 3.2.6.

Volumetric Description of Wastes. A wide range of waste volumes is collected from research and support activities. The largest unit container collected is a 55-gal drum, which in some circumstances may require overpacking into an 85-gal salvage drum, while the smallest is a trace amount in a small vial.

Large volume containers (greater than 4 L) commonly contain chemicals such as those listed in WAC 173-303-9903 and -9904 and in 40 CFR 261.33, or commercial products which exhibit one or more of the dangerous waste characteristics or criteria. Greater than 99% of the containers generally contain chemicals for which information is easily accessible to determine dangerous designation. This information is generally obtained from the container label, for those wastes in original containers, or from the material safety data sheet (MSDS) for the product.

Notification for Storing of Waste. The waste analysis process begins when the waste management organization is notified of the presence of a chemical or mixed waste. This notification is accomplished by the generating unit completing and transmitting a Chemical Disposal/Recycle Request Form (Fig. 2-8). The form describes the volume and chemical composition of waste in each waste container for disposal. Hazard and compatibility information are obtained for each item on the disposal request form to ensure the safety of the waste management organization staff who collect and transport the waste and to ensure safe and appropriate storage in 305-B.

The compatibility and hazard designation are determined using references listed in WAC 173-303-070 and those in Table 3-1. The priority of hazard designation for those substances with multiple hazards or for mixtures is the same used by the DOT in 49 CFR 173.2 and 173.2a. Refer to these tables when multple hazards exist.

Reference sources used for determining waste designations and compatibility must meet four distinct needs of the dangerous waste manager and sample collector. They must enable each to:

- Identify those wastes which are designated dangerous in accordance with WAC 173-303 and whether those wastes are DW or EHW
- Determine whether the waste is restricted from land disposal under 40 CFR 268 or WAC 173-303-140 and, as appropriate, complies with treatment standards under 40 CFR 268 or WAC 173-303-140
- Identify and verify specific morphological characteristics of waste in solid or solution form
- Outline how to safely handle, transport, analyze, store, and dispose of the waste product or sample.

Table 3-1. Typical Reference Materials.

1.	Condensed Chemical Dictionary, 11th Ed., Hawley, 1987.
2.	The Merck Index, 11th Edition, 1989.
3.	Registry of Toxic Effects of Chemical Substances, U.S. Department of Health, Education, and Welfare. National Institute for Occupational Safety and Health.
4.	The Sigma-Aldrich Library of Chemical Safety Data, 2nd Edition, R. E. Lenga, Ed., 1988.
5.	NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, 1985.
6.	Handbook of Toxic and Hazardous Chemicals and Carcinogens, Second Edition, Marshall Sittig, Noyes Publications, Park Ridge, New Jersey, 1985.
7.	A Method for Determining the Compatibility of Hazardous Wastes, EPA-600/2-80-076, U.S. Environmental Protection Agency, Cincinnati, Ohio, 1980.
8.	CRC Handbook of Chemistry and Physics.

Physical Analysis. Visual validation as a physical analysis procedure is strongly relied upon to confirm the nature of a waste collected or sampled, and to determine the accuracy of the disposal request information received from the generating unit. It is impractical for the waste management organization to chemically analyze each container or vial of waste accepted for storage in 305-B since the amount can exceed 10,000 per year. A more realistic approach to reducing risks to safety and the environment, and one implemented at 305-B, includes trained and experienced personnel performing a visual inspection of the waste and direct inquiry of the generating unit's personnel. The waste is inspected to verify that it matches the description on the disposal request. 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 wastes, e.g., spent solvents, waste descriptions are compared with the products in use at the generating unit. Generating unit personnel are queried concerning the source of the waste and the materials used in the process generating the waste. This information is compared to the description of the waste on the disposal request. If, after visual inspection of the waste and interrogation of the generating unit personnel, any doubt remains as to the true identity of the waste, the waste is sampled and analyzed by the generating unit as described in Sections 3.2.1 through 3.2.6.

Waste Collection at the Generating Unit. When satisfactory information has been obtained from the Request for Disposal/Recycle Form, waste management organization staff visit the generating unit site and make a final inspection of the waste containers to determine whether the disposal request form and contents label information match completely. If the information on the disposal request matches with the container labeling and visual inspection, the wastes are approved for storage. If discrepancies are found, the generating unit is required to resubmit the disposal request with accurate information. Unknown or unidentified materials are sampled by generating unit staff for identification of constituents and remain at the generating unit until the composition has been determined. Generating units must arrange for sampling and analysis of all unknown materials, as described in Sections 3.2.1 through 3.2.6.

Labeling and Marking. After inspection of the waste at the generating unit, the approved wastes are assigned a unique computer identification number and hazard classification. The waste containers are then marked and labeled in compliance with WAC 173-303-190 (DOT marking and labeling), and Washington "Hazardous Waste" markings. Wastes meeting Washington dangerous waste criteria under WAC 173-303-084 or 173-303-090 are marked "Toxic" (for wastes designated WT01 or WT02), and/or "Persistent" (for wastes designated WP01, WP02, or WP03), in accordance with WAC 173-303-630(3). In addition, each waste container is labeled with a list of constituents and/or an appropriate hazard description. The containers are also labeled indicating compatibility group and cell location, and with a unique computer-generated identification number created by the tracking system described below. This computerized information helps the waste handlers ensure safe handling, storage, retrieval and transportation of dangerous waste.

Transportation. The labeled containers are transported to 305-B by PNNL staff. Staff responsible for transporting wastes are trained in applicable DOT requirements and emergency response. Wastes are transported using a truck or light utility vehicle. For transport on roads accessible to the public, the vehicles are placarded in compliance with DOT regulations and manifested in compliance with WAC 173-303-180, as applicable.

Waste Handling, Storage, and Tracking at 305-B. Wastes received at 305-B are put into 14 separate hazard classifications based on building and fire code restrictions for that type of facility:

1. Nonflammable RMW
2. Oxidizers
3. Acids, (organic and inorganic)
4. Poison
5. Caustics
6. Non-Regulated
7. Miscellaneous (Class 9 categories)
8. Washington State only waste (e.g., sodium chloride, sodium bicarbonate)

9. Compressed Gases (including aerosols)
10. Flammable Solids
11. Flammable and combustible liquids
12. Flammable and combustible RMW
13. TSCA wastes (PCB and asbestos) waste
14. Special Case wastes (organic peroxides, explosives, etc.)

Each hazard class has designated and clearly identified locations within 305-B. Containers of dangerous waste (10 gal or less) are stored in a specific storage cabinet or shelf designed for that hazard class. The cabinets are located inside the appropriate storage cell (i.e., acid storage cabinet in acid cell). DOT-approved containers (greater than 10 gal capacity) are segregated by hazard class on the main high bay floor in 305-B.

Only sealed containers of nonflammable RMW are received in the below-grade RMW storage area located in the basement of 305-B. Containers of flammable RMW are stored above grade in an area adjacent to the high bay area. Small containers (five gallons or less capacity) are stored in a flammable storage cabinet. Larger containers, if intact, are stored in individual secondary containment devices, such as drip pans or pallets with secondary containment, adjacent to the cabinet. All chemical storage is in accordance with fire protection requirements of the 1988 Uniform Fire Code (International Conference of Building Officials 1988).

Recordkeeping and Inventory Control. A computer tracking system, CHEMHAZ/HAZTRAK, has been developed to ensure that complete records of current inventory, packaging, and shipping data are maintained. Records of the initial waste disposal request form, waste analysis results if required, waste designation, and shipping manifest are maintained. These records are filed, cross-referenced, and transcribed into the computer data base management system. As wastes are received for redistribution or disposal, the containers are labeled with the information described in the Labeling and Marking section above, including a unique computer identification number. This number is also written on the disposal request form. The label information is then entered into the computerized data base, along with the storage location within 305-B.

The endpoint of the process for most wastes is proper packaging and transport of the waste to an approved recycler or treatment/disposal facility. Some commercial chemical products, however, are redistributed to other Hanford Site contractors, as described in Section 10.4. Final computer verification of the history and ultimate disposal of each waste container is entered when the material is shipped from the 305-B unit.

Current waste quantities in inventory are checked weekly and reported to the unit operator, and monthly to the waste management organization manager as a part of the month-ending operation report. The inventory is checked by hazard class and provides a measure of current inventory versus established limits.

If it is determined that 305-B inventory is approaching the limit for a given hazard classification, additional waste of that hazard class is not accepted into 305-B until the inventory has been reduced. In this instance, the generating unit may be required to store the waste at the generator facility until shipment to an offsite facility can be arranged (<90 days).

Unknown Wastes and Waste Constituent Verification. Containers with unknown waste compositions are not accepted at 305-B. In the event that 305-B staff is required to respond to a critical need of a generating unit in the future and pick up an unknown waste, it will be sampled and analyzed as described in Sections 3.2.1 through 3.2.6.

If, for any reason, 305-B personnel believe that more stringent analysis of non-reagent grade chemical wastes is needed (i.e., flash cans and mixtures), they will request that the generating unit have the wastes analyzed by an approved analytical laboratory. Reasons for this request may be questionable appearance of the waste, periodic confirmation of waste composition, or historically unreliable information from a particular generating unit. There is no established

frequency for this sampling and analysis; it is conducted on an as-needed basis. This analysis must be performed in accordance with EPA SW-846 procedures (EPA 1986). The 305-B Storage Facility maintains contracts with qualified offsite analysis facilities to perform the analysis. The generating unit must also provide the laboratory analysis confirming the waste composition when the waste management organization picks up the waste. This analysis will become part of the 305-B Operating Record.

3.2.1 Parameters and Rationale [C-2a]

Waste testing parameters and the rationale for these parameters are summarized in Table 3-2. Testing parameters for each type of unknown waste were selected to obtain data sufficient to properly designate the waste under WAC 173-303-070 and to properly manage the wastes. If limited information on the source of the waste is available, all of the parameters may not be required. For example, if waste oil is known to be from an area where no PCB is present, testing for PCB may not be required.

3.2.2 Test Methods [C-2b]

Waste testing methods and references to these methods are as specified in WAC 173-303-110(3) or approved by Ecology in accordance with WAC 173-303-110(5). These methods are summarized in Table 3-2. All methods are specified in *Chemical Testing Methods*, WDOE 83-13 (Ecology 1983) and/or *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, EPA SW-846 (EPA 1986).

3.2.3 Sampling Methods [C-2c]

Representative sampling may be requested by unit staff to ensure proper waste identification. Sampling may be performed by unit personnel or the generating unit producing the waste.

In all instances, sampling methods will conform to the representative sample methods referenced in WAC 173-303-110(2), i.e., ASTM standards for solids and SW-846 for liquids. The specific sampling methods and equipment used will vary with the chemical and physical nature of the waste material and the sampling circumstances.

Representative samples of liquid wastes (vertical "core sections") will be obtained using a composite liquid waste sampler (COLIWASA) or tubing, as appropriate. The sampler will be 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 will be separated for individual testing and designation.

Table 3-2. Summary of Test Parameters, Rationales, and Methods.

Waste Type	Parameter	Rationale	Test Method
Spent halogenated solvent mixtures	Halogenated hydrocarbon content	Persistent dangerous waste per WAC 173-303-084(6)	WDOE persistence testing
	Flash point	Ignitable waste per WAC 173-303-090(5); Flammable waste storage limits	Pensky-Martens closed cup Setaflash closed cup
	Halogenated organic compounds	Land disposal restrictions for solvent and California List wastes	TCLP leachate Volatile organic compounds by GC/MS[1] Semivolatile organic compounds by GC/MS
	PCB content	Land disposal restrictions for California List wastes	TCLP leachate PCBs by GC[2]
Spent nonhalogenated solvent mixtures	Flash point	Ignitable waste per WAC 173-303-090(5); Flammable waste storage limits per UFC	Pensky-Martens closed cup Setaflash closed cup
	PCB content	Land disposal restrictions for California List wastes	TCLP Leachate PCBs by GC
Waste oils	Flash point	Ignitable waste per WAC 173-303-090(5); Flammable waste storage limits; Flammable waste oil subject to requirements under WAC 173-303-515 when burned for energy recovery	Pensky-Martens closed cup Setaflash closed cup

Table 3-2. (Cont'd).

Waste Type	Parameter	Rationale	Test Method
Waste oils (continued)	PCB content	PCB contaminated wastes with less than 50 ppm PCB may be listed under WAC 173-303-9904; Waste oil with greater than 2 ppm PCB subject to requirements under WAC 173-303-515 when burned for energy recovery	PCBs by GC
	EP toxicity	EP toxic characteristic waste per WAC 173-303-090(8); Waste oil with elevated levels of As, Cd, Cr, Pb subject to requirements under WAC 173-303-515 when burned for energy recovery	EP metals by AA[3]
	Halogenated hydrocarbon content	Persistent dangerous waste per WAC 173-303-084(6); Waste oil with elevated halogens subject to WAC 173-303-510 or -515 when burned for energy recovery	WDOE persistence testing
Aqueous waste	Corrosivity	Corrosive characteristic waste per WAC 173-303-090(6), Land disposal restrictions for California List wastes	pH measurement; steel corrosion rate
	Reactivity	Reactive characteristic waste per WAC 173-303-090(7)	Sulfide - iodometric Cyanide - colorometric
	Toxicity Characteristic	Characteristic waste per WAC 173-303-090(8), Land disposal restrictions for California List wastes	TCLP Leachate EP metals by AA Pesticides by GC

Table 3-2. (Cont'd)

Waste Type	Parameter	Rationale	Test Method
Aqueous Waste (continued)	Toxicity	Toxic waste mixtures per WAC 173-303-084(5)	Metals by ICP Volatile organic compounds by GC/MS Semivolatile organic compounds by GC/MS Toxicity tests
Organic waste	Flash point	Ignitable waste per WAC 173-303-090(5); Flammable waste storage limits	Pensky-Martens closed cup Setaflash closed cup
	Toxicity	Toxic waste mixtures per WAC 173-303-084(5)	Volatile organic compounds by GC/MS Semivolatile organic compounds by GC/MS Toxicity tests
	Halogenated hydrocarbon content	Persistent dangerous waste per WAC 173-303-084(6)	WDOE persistence testing
	Polycyclic aromatic hydrocarbon content	Persistent dangerous waste per WAC 173-303-084(6)	WDOE persistence testing
Organic waste (continued)	PCB content	PCB contaminated wastes with less than 50 ppm PCB may be listed under WAC 173-303-9904	PCBs by GC
	Halogenated organic compounds	Land disposal restrictions for solvent and California List wastes	TCLP leachate Volatile organic compounds by GC/MS Semivolatile organic compounds by GC/MS
	Free liquids	Land disposal restrictions for liquid wastes	Paint filter test

Table 3-2. (Cont'd).

Waste Type	Parameter	Rationale	Test Method
Unknown solid waste	Corrosivity	Corrosive characteristic waste per WAC 173-303-090(6)	pH measurement
	Reactivity	Reactive characteristic waste per WAC 173-303-090(7)	Impact apparatus
	TCLP toxicity	TCLP toxic characteristic waste per WAC 173-303-090(8)	TCLP leachate EP metals by AA Pesticides by GC
	Toxicity	Toxic waste mixtures per WAC 173-303-084(5)	Metals by ICP Volatile organic compounds by GC/MS Semivolatile organic compounds by GC/MS Toxicity tests
Unknown Solid Waste (continued)	PCB content	PCB contaminated wastes with less than 50 ppm PCB may be listed under WAC 173-303-9904	PCBs by GC
	Halogenated organic compounds	Land disposal restrictions for solvent and California List wastes	TCLP leachate Volatile organic compounds by GC/MS Semivolatile organic compounds by GC/MS
	Free liquids	Land disposal restrictions for liquid wastes	Paint filter test

Notes:

[1]GC/MS - Gas Chromatography/Mass Spectroscopy
[2]GC - Gas Chromatography
[3]AA - Atomic Absorption
[4]ICP - Inductively Coupled Plasma Emission Spectroscopy

Other waste types which may require sampling are sludges, powders, and granules. Nonviscous sludges will be sampled using a COLIWASA. Highly viscous sludges and cohesive solids will be sampled using a trier, as specified in SW-846 (EPA 1986). Dry powders and granules will be sampled using a thief, also as specified in SW-846 (EPA 1986).

Samplers will be constructed of material compatible with the wastes. In general, aqueous liquids will be sampled using polyethylene samplers, organic liquids using glass samplers, and solids using polyethylene samplers. Disposable samplers will be used whenever possible to eliminate the potential for cross-contamination. If nondisposable sampling equipment is used, it will be decontaminated between samples using the guidelines in the unit sampling procedures.

The number of samples collected will depend on the amount of waste present and on the heterogeneity of the waste as determined by observation. In most cases, there will be only one container of waste present. In such cases, only one vertical composite sample will be collected (e.g., COLIWASA). If more than one container is present, a random number of samples will be collected and analyzed statistically using the procedures specified in Section 9.2 of SW-846 (EPA 1986).

3.2.4 Frequency of Analyses [C-2d]

Dangerous waste types listed in Table 3-2 are sampled as needed on an individual container or batch basis before they are collected from the point of generation or prior to shipment offsite. After the dangerous constituents have been characterized, these waste streams will not be analyzed again until process or raw material changes occur.

3.2.5 Additional Requirements for Waste Generated Offsite [C-2e]

All wastes stored at 305-B are generated on the Hanford Site and/or by PNNL research programs; in fact, most of the wastes stored in the unit are generated within the 300 Area. Additional requirements for wastes generated outside the 300 Area include proper manifesting (if appropriate) to 305-B and proper packaging for transport over public roadways. Although wastes generated outside of the 300 Area may be considered to be generated offsite since they are transported to 305-B on roads accessible to the public, they are under the same administrative controls as wastes which are generated onsite (i.e., in the 300 Area). There are no additional requirements, therefore, for wastes generated offsite.

3.2.6 Additional Requirements for Ignitable, Reactive, or Incompatible Wastes [C-2f]

As described in Section 2.1, wastes stored at 305-B are divided into DOT hazard classes and stored in separate locations to ensure compatibility. The testing parameters identified in Table 3-2 are sufficient to properly identify the hazard class of unknown wastes and assure proper separation of incompatible wastes. The parameters in Table 3-2 are also appropriate to identify ignitable wastes to ensure that these wastes are stored in appropriate locations. The test parameters will also allow identification of those ignitable wastes which are also flammable wastes (i.e., flash point $\leq$141°F or 60.5°C). Identification of flammable wastes is necessary since there are restrictions on the amount of flammable liquids that can be stored in 305-B.

This page intentionally left blank.

4.0 PROCESS INFORMATION [D]

4.1 CONTAINERS [D-1]

The following sections describe the types of containers stored at the 305-B Storage Unit.

4.1.1 Containers With Free Liquids [D-1a]

Containers with free liquids are discussed below.

4.1.1.1 Description of Containers [D-1a(1)]. Most wastes stored at the 305-B Storage Unit are received in their original, as-procured containers. Containers of hazardous materials entering 305-B are inspected before being accepted for storage. Generating units are responsible for placing the materials in adequate containers. Repackaged materials must be placed in containers that are new and compatible with the materials to be stored.

Containers in poor condition or inadequate for storage are not accepted at the unit. If transport is by unit personnel, such containers are not accepted for transport. See Section 6.4.1 for inspection prior to transport performed by unit personnel. "Container in poor condition or inadequate for storage" means a container which is not intact or undamaged and which is not securely sealed to prevent leakage during storage, transport and ultimate offsite disposal. Examples of acceptable packagings include laboratory reagent bottles, DOT containers, spray cans, sealed ampules, paint cans, leaking containers which have been overpacked, etc. Unit operations personnel have the authority to determine whether a container is in poor condition or inadequate for storage, using the criteria of WAC 173-303-190 and professional judgement whether the packaging may leak during handling, storage and/or disposal.

As with all wastes, repackaged containers of dangerous waste are marked and/or labeled to describe the contents of the container and the major hazards of the waste, as required under WAC 173-303. Containers are also marked with a unique identifying number assigned by the unit's computerized waste tracking system.

All flammable liquid wastes are stored in compatible DOT-specified shipping containers and/or in Underwriter's Laboratory (UL)-listed and Factory Mutual (FM)-approved flammable storage cabinets. Solid chemicals are stored on shelving in specifically designated areas based on the DOT hazard classification.

All containers utilized for offsite transport of dangerous wastes at the unit are selected according to the container selection criteria found in WAC 173-303-190(1). Containers utilized for off-site shipment shall also comply with WAC 173-303-190(2) and (3). 305-B personnel shall comply with WAC 173-303-190(4).

4.1.1.2 Container Management Practices [D-1a(2)]. Management practices and procedures for containers of dangerous waste are in place at the 305-B Storage Unit to assure the safe receipt, handling, preparation for transport, and transportation of wastes. These practices and procedures are summarized below.

Inspection of Containers. A system of daily, weekly, monthly, and yearly inspections is in place to ensure container integrity, check for proper storage location, prevent capacity overrun, etc. These inspection procedures are detailed in Section 6.2.

Container Handling. All unit staff are instructed in proper container handling safeguards as part of their training (see Section 8.1.2 for further details). For example, employees are instructed to open all high-vapor-pressure liquids in the flammable liquid bulking module to avoid buildup of vapors in the unit. Containers are always kept closed except when adding or removing waste, in accordance with WAC 173-303-630(5)(a).

Containers are not opened, handled or stored in a manner which would cause the container to leak or rupture. Small containers (five gallons or less capacity) are stored on ventilated shelving or in approved flammable liquid storage lockers (if appropriate). Containers over five gallons capacity are stored on the floor of the appropriate storage cell, in cabinets, or stored in the appropriate containment area on the high bay floor under Section 4.3.2. Unnecessary handling not required for redistribution or preparation for transport and disposal by either labpacking or bulking (see below) is minimized. Drums are moved manually, by crane or chain hoist, or with an electric forklift. For manual movement, hand trucks specifically designed for drum handling are used. Crane and chain hoist operations are performed using a choker chain or drum hoist. When using the forklift, a drum hoist is used or the drums are carried on pallets. Drums are never carried on the forks or "speared" by slipping the forks under the chime. When waste handling operations are conducted, a minimum of two persons are present in the unit.

Lab Packing. One of the major functions of the 305-B Storage Unit is the preparation of lab packs for offsite recycling, treatment and/or disposal of small quantity lab wastes generated by DOE-RL/PNNL activities.

Lab packs are prepared in compliance with WAC 173-303-161, 49 CFR 173.12, other applicable regulations, and permit conditions of the planned receiving facility (recycler, treatment facility, or disposal facility). Permit conditions affecting preparation of lab packs might include types of absorbent materials to be used (e.g., no vermiculite).

Lab packs are prepared in the storage cell containing the hazard class(es) to be placed in the lab pack. The elephant trunk ventilator system is used to minimize respirable dusts from the absorbent material being used (usually vermiculite). Lab packs may also be prepared in the flammable liquid bulking module if appropriate; for instance, if compatible materials from more than one storage cell are being combined in a single lab pack drum. Lab packs may be prepared in the high bay storage area if storage of the completed lab pack is permitted there per Section 4.3.2.

Partial and completed lab packs are closed, labeled, and the contents list documented. Labpacks are stored in the cell from which the containers inside were drawn, or in the high bay if appropriate.

Unit personnel wear appropriate protective clothing while handling containers being placed in lab packs. At a minimum this includes labcoats, safety glasses or other protective eyewear, and chemical resistant gloves. More stringent requirements, including use of respiratory protection, may be imposed if appropriate.

Bulking. In order to promote greater recycling or treatment of wastes and reduce land disposal, some liquid wastes are "bulked" into larger containers, typically 30- or 55-gallon closed head drums. Bulking operations for chemicals which are respiratory or flammability hazards are performed in the "flammable liquid bulking module" (Also referred to as cell 5.) located in the southwest corner of the unit. Bulking of nonvolatile, low hazard wastes such as saline solutions or ethylene glycol may be done within the containment areas of the appropriate storage cell or high bay.

Wastes to be bulked are fully characterized under the 305-B unit waste analysis plan in Section 3.2. Compatibility is determined using the information from generating unit designation information, process knowledge, laboratory analyses, and/or the compatibility determinations described in Section 6.5.2.

Containers are transported by hand or forklift to the flammable liquid bulking module area. The receiving drum (typically 30- or 55-gallon capacity) is placed in the module and the ventilation system is activated. A large chemically- resistant funnel (either metal or plastic, depending on material to be introduced) is used to pour the material into the drum. The contents of the smaller containers are then poured, one at a time, into the larger drum. The receiving drum is monitored by unit personnel to make sure no incompatibility is observed (e.g., fuming, bubbling, or heat generation). If such incompatibility is observed, no further material is added and the worker leaves the area, closing the module and leaving the ventilation on. The unit supervisor is notified to evaluate implementation of the contingency plan.

6.2.2.4 Surface Impoundment Inspection [F-2b(4)]. This section does not apply to the 305-B Storage Unit because wastes are not placed in surface impoundments.

6.2.2.5 Incinerator Inspection [F-2b(5)]. This section does not apply to the 305-B Storage Unit because wastes are not incinerated.

6.2.2.6 Landfill Inspection [F-2b(6)]. This section does not apply to the 305-B Storage Unit because wastes are not placed in landfills.

6.2.2.7 Land Treatment Facility Inspection [F-2b(7)]. This section does not apply to the 305-B Storage Unit because wastes are not treated in land treatment units.

6.3 WAIVER OR DOCUMENTATION OF PREPAREDNESS AND PREVENTION REQUIREMENTS [F-3]

The following documents the preparedness and prevention measures taken at the 305-B Storage Unit.

6.3.1 Equipment Requirements [F-3a]

The following sections describe the internal and external communications and emergency equipment in use at 305-B.

6.3.1.1 Internal Communications [F-3a(1)]. Internal communication systems are used to provide immediate emergency instruction to personnel in 305-B. Internal communications address general emergencies which may occur in the 300 Area as well as specific emergencies which may occur in 305-B.

Because of the nature of activities which occur in the 300 Area, the potential exists for emergencies outside of 305-B (e.g., release of radioactive materials) which could impact operations and staff in 305-B. For this reason, the general emergency signals for the 300 Area are applicable to 305-B. These signals are summarized in Table 6-1. Fire alarm signals are located in each building throughout the 300 Area. The nearest emergency siren for "area evacuation" and "take cover" is located 300 yards southeast of 305-B, on top of the 326 Building, and is audible in all parts of 305-B. Because fissile materials are not handled in 305-B, there is no criticality alarm for the unit.

Internal communications to provide emergency instruction in the event of an emergency in 305-B are fire alarms, public address (PA) system, and telephones. The fire alarms are to be used to provide notification for immediate evacuation of 305-B. Fire alarm pull boxes are located at all exits of the facility such that operating personnel have immediate access to one in all portions of 305-B. Four fire alarm bells are located within the 305-B and are audible at all locations within the building. The locations of the fire alarm bells are shown in Figure 6-4 and are as follows: (1) an office wing on the northeast hall; (2) an office wing next to the east entrance; (3) on the south wall of the basement; and (4) on the northeast wall of the high bay. The PA system is to be used for building-wide broadcasting of verbal emergency instructions to 305-B staff. The PA system can be accessed from any unit telephone by dialing 6-1885. The PA system speakers are located in the high bay, in the basement, and in the office wing of 305-B.

The telephone system is to be used to provide verbal emergency instructions to 305-B staff. The telephone can also be used to verbally transmit emergency data to non-305-B staff, and to request emergency services. A network of telephones covers both floors of the facility. Locations of telephones are shown in Figure 6-4. In addition to the telephone communication system at 305-B, operation personal have access to the hand held radios, as well as one in each vehicle assigned to the facility.

Table 6-1. Emergency Signals and Responses		
Signal	Meaning	Response
Gong	Fire	Evacuate building. Move upwind. Keep clear of emergency vehicles.
Siren - steady 3-5 minute blast	Area Evacuation	Proceed promptly to north parking area. Stand by to follow instructions from emergency director.
Wavering Siren	Take Cover	Close up the 305-B Building, turn off all intake ventilation and go to the 314 Building south of the facility. Contact Laboratory Safety (337 Building) with your whereabouts. If this cannot be accomplished, stay in the 305-B Building until notified that it is safe to leave
Howler (Aa-oo-gah)	Criticality	Run immediately at least 100 yards away from the signal and take cover. Personnel inside the 305-B Building should follow the "take cover" procedure and wait for further instructions.
ALL EMERGENCY SIGNALS CAN BE HEARD BY PHONING 373-2345		

6.3.1.2 External Communications [F-3a(2)]. As mentioned in Section 6.3.1.1 above, both a fire alarm system and telephone network system are in place at 305-B. Both systems can be used to summon emergency assistance. The fire alarm system summons direct response from the Hanford Fire Department's 300 Area Station. The telephone system can be used to access Hanford's Emergency Network directly at 375-2400 or by dialing the emergency number, 811. Locations of fire alarm pull boxes and telephones are given in Figure 6-4.

6.3.1.3 Emergency Equipment [F-3a(3)]. Emergency equipment available for trained 305-B personnel includes portable fire extinguishers, a fire suppression system, spill response equipment, and decontamination equipment. Six portable 10-lb ABC fire extinguishers, one 15-lb (or larger) Class D fire extinguisher for combustible metals, and one portable 14-lb Halon fire extinguisher are available at various locations throughout 305-B, as shown in Figure 6-4. The 10-lb ABC extinguishers are located: (1) next to the east entrance; (2) northwest end of the basement; (3) southwest end of the high bay; (4) outside of the bulking module door; (5) north of Cell No. 4 entrance; and (6) north-west end of high bay. The 15-lb (or larger) class D extinguisher is located on the exterior of the organics cell wall north of the entrance. The one Halon fire extinguisher is located in the office area.

The facility is also equipped with an automatic fire suppression system consisting of galvanized steel, schedule 40 per ASTM A120 pipe and 150-lb malleable iron per ANSI B16.3 fittings. All components are UL-listed or FM-approved, and installation of the fire sprinkler system has been conducted in accordance with NFPA 13 for ordinary hazard. Spill cleanup supplies and equipment maintained are summarized in Table 6-2. Two emergency eye wash/showers are available for emergency personnel decontamination. The locations of the emergency eye wash/showers are shown in Figure 6-4. If needed, additional emergency equipment can be provided by the Hanford Fire Department. Emergency equipment available through the Hanford Fire Department for hazardous materials response is identified in Appendix 6A.

6.3.1.4 Water for Fire Control [F-3a(4)]. Adequate water volume and pressure are supplied by the large diameter line which services 305-B for potable use and fire protection. Three fire hydrants are located in immediate proximity to serve the 305-B facility: (1) 80 ft directly north of the northwest corner of 305-B; (2) 40 ft directly south of the southwest corner of 305-B; and (3) 60 ft directly east of the southeast corner of 305-B. In addition, the Hanford Fire Department's 300 Area Station is located within 0.25 mile of 305-B.

Response by an emergency coordinator is usually obtained through the PNNL Single Point Contact at (509) 375-2400. The Single Point Contact has been designated as the contact point to mobilize a response to any PNNL emergency on the Hanford Site. The Single Point Contact is available at all times and has the responsibility to contact the BED or alternate to begin responses to emergencies under this plan.

Due to the security requirements at the Hanford Site, DOE-RL does not submit names or phone numbers of personnel acting as emergency contacts as part of permit applications or other public documents. All emergency notifications to the BED, building managers, etc. are made through the PNNL Single Point Contact. The names and work phone numbers of the 305-B Emergency Coordinator(s) shall be submitted to the Department and the Agency and kept at the Single Point contact and with the contingency plan at the 305-B Unit.

7.3 IMPLEMENTATION OF THE CONTINGENCY PLAN [G-3]

The decision by the BED or alternate to implement this Plan depends on whether an incident in progress may threaten human health or the environment. Immediately after being notified of an emergency, the BED or alternate will go to the site and evaluate the situation. Based on evaluation of the event, the BED or alternate will implement this plan to the extent necessary to protect human health or the environment.

Incidents discovered by unit personnel trained in emergency response may be responded to according to the procedures given in this plan prior to the arrival of the BED. However, immediate notification of the BED is still required prior to implementing these procedures.

7.4 EMERGENCY RESPONSE PROCEDURES [G-4]

Emergency response procedures have been established for the 305-B Storage Unit and are described below.

7.4.1 Notification [G-4a]

Discoverer

1. If within the unit, notify unit personnel of discovery of spill or release.

2. Immediately notify the PNNL Single Point Contact (375-2400) and provide all known information, including:
   - Name(s) of chemical(s) involved and amount(s) spilled, on fire, or otherwise involved, or threatened by, the incident.
   - Name and callback phone number of person reporting the incident.
   - Location of spill or discharge (pinpoint as closely as possible).
   - Time incident began or was discovered.
   - Where the materials involved are going or may go, such as into secondary containment, under doors, through air ducts, etc.
   - Source and cause, if known, of spill or discharge.
   - Name(s) of anyone contaminated or injured in connection with the incident.
   - Any corrective actions in progress.
   - Anyone else who the caller has contacted.

NOTE: DOE-RL and other (non-PNNL) contractor personnel are trained to notify Hanford Emergency number (811 from onsite telephones) rather than the Single Point Contact Hanford Patrol, who operates the 811 number, then notifies the Single Point Contact.

Single Point Contact

1. The single point contact will notify the BED, or one of his alternates if the BED cannot be immediately reached, to arrange immediate response to the incident.

2. The single point contact will arrange for immediate response from Hanford Fire Department for fire or ambulance services as needed based on the report of the discoverer.

3. The single point contact will notify the Laboratory Safety Department of the spill or release incident.

4. The single point contact will support the BED in providing further notification and coordination of response activities if needed. Potential activities requiring single point contact participation are:
   - Activate the general evacuation alarm for the 300 Area, if the BED determines that evacuation is necessary..
   - Notify the Emergency Management Center (EMC) operated for DOE by Project Hanford Management Contractor (PHMC) if evacuation of the 300 Area or adjacent areas is necessary.
   - Activate the 300 Area Emergency Control Center (ECC), described in the Site Emergency Plan, if needed.
   - Notify the DOE-RL Emergency Action Coordinating Team (EACT) in accordance with the Sitewide Emergency Plan if necessary to evacuate areas lying outside the Hanford Site.
   - Any other activities found in the DOE-RL Site Emergency Plan.

Building Emergency Director (BED) (or alternate)

1. Notify the Single Point Contact if an evacuation is needed. EXCEPTION: If only 305-B needs to be evacuated, activate the fire alarm first, then notify the Single Point Contact.

2. Arrange for care of any injured employees, utilizing the Single Point Contact for notification of ambulance services.

3. Notify the Single Point Contact of any need to activate the 300 Area Emergency Control Center (ECC) described in the Sitewide Emergency Plan. Activation of the ECC should be done whenever technical assistance in evaluating a spill is required, when the emergency may affect other neighboring buildings, or when otherwise deemed necessary by the BED. See Section 7.5.5.

4. Provide for off-normal event notification in accordance with DOE Order 5000.3A, PNL-MA-11, and other established site procedures, within 30 minutes of discovery. (Normally this is done through the Single Point Contact.)

5. Provide details on incident to Environmental, Safety, & Health Directorate as they become available.

Laboratory Safety

1. Provide telephone notification of incident to DOE-RL contact personnel. Sections 12.4.1.5.1 and 12.4.1.6 of the permit application.

Hanford Facility RCRA Modification Notification Forms

for

Part III, Chapter 5

242-A Evaporator

THIS PAGE INTENTIONALLY
LEFT BLANK

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
242-A Evaporator	Part III, Chapter 5 [Section 2.1.2.2]

Description of Modification:

Page 2-4, Section 2.1.2.2, lines 1-5:

2.1.2.2 Steam Service Supply. Steam needed for the 242-A Evaporator process ~~currently~~ is supplied by the ~~200 East Area powerhouse, 284-E Building, which supplies a high-pressure steam loop serving many units in the 200 East Area~~242A-BA package boiler annex. ~~A 6-inch steam line~~The boiler annex supplies ~~1,550~~medium pressure steam (620 kilopascals gauge pressure) and low pressure steam (69 kilopascals gauge pressure) to the 242-A Evaporator Building. ~~In the future, the 284-E Building will be shut down and steam will be provided to units in the 200 East Area (including the 242-A Evaporator) by several package boilers.~~ The ~~284-E Building and the package boilers are~~242-BA boiler annex is not part of the 242-A Evaporator.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.3

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

Equipment replacement or upgrades with functionally equivalent components (e.g., pipes, valves, pumps, conveyors, controls).

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K-J. Svoboda for 3/27/98	4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

THIS PAGE INTENTIONALLY
LEFT BLANK

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
242-A Evaporator	Part III, Chapter 5 [Appendix 3A]

Description of Modification:

Appendix 3A, Section 1.2, Page 1-1, lines 36-47 and Page 1-2, lines1-8:

1.2 SCOPE

This WAP discusses RCRA sampling and analysis of the waste in selected DST System tanks to determine the acceptability of the waste for processing at the 242-A Evaporator. Sampling and analysis of DST System waste for other reasons, such as preparation for tank-to-tank transfers, is included in the waste analysis plan for the DST System.

RCRA sampling of the process condensate transferred to the Liquid Effluent Retention Facility (LERF) can be performed at either 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 ~~*Waste Analysis Plan for the Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility* (HNF-SD-ENV-WAP-008~~ *Hanford Facility Dangerous Waste Permit Application, Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility* (DOE/RL-97-03, Appendix 3A).

Samples of other 242-A Evaporator waste streams, such as steam condensate, cooling water, and 242-A-81 backflush 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.

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. J. Svoboda for 3/27/98	Helen G. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

THIS PAGE INTENTIONALLY
LEFT BLANK

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
242-A Evaporator	Part III, Chapter 5 [Appendix 3A, Section 8.0]

Description of Modification:

Appendix 3A, Page 8-1, Section 8.0, lines 19-22:

DOE/RL-97-03, *Hanford Facility Dangerous Waste Permit Application, Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility*, Revision 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington

Appendix 3A, Page 8-1, Section 8.0, lines 48-50:

~~HNF-SD-ENV-WAP-008, *Waste Analysis Plan for the Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility*, Rust Federal Services of Hanford, Inc., Richland, Washington.~~

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification:

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL/ Program Office:	Reviewed by Ecology:
K. J. Svoboda for 3/27/98	Adlin Q. Bilson 4/4/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

THIS PAGE INTENTIONALLY
LEFT BLANK

Part III, Chapter 5

242-A Evaporator

Page Changes

THIS PAGE INTENTIONALLY
LEFT BLANK

2.1.1.6 **Loadout and Hot Equipment Storage Room.** The loadout and hot equipment storage room is located adjacent to the pump room and is open to the overhead crane gallery. Failed pump room equipment (pumps, jumpers, etc.) are placed here by crane, decontaminated, and either repaired or packaged for disposal.

A shielded sampling enclosure is located within the room along a portion of the wall that is common with the pump room. Sampling lines run from the pump room to this enclosure. Valve handles outside the enclosure and a shielded viewing window allow the remote collection of feed and slurry samples.

2.1.1.7 **Loading Room.** The loading room is located in the southwest corner of the 242-A Building. The ceiling of the loading room is formed by a rollup, nylon-vinyl curtain-type door enclosure that can be rolled open to allow transfer of equipment between the loading room and the loadout and hot equipment storage room using the overhead crane.

2.1.1.8 **Heating, Ventilation, and Air Conditioning Room.** The HVAC room is located on the second floor, directly above the AMU room. The HVAC room contains the supply ventilation equipment for the 242-A Building.

2.1.1.9 **Ion Exchange Column Room.** The ion exchange enclosure is a small area that holds the ion exchange column for process condensate treatment. The enclosure is located on the north wall of the condenser room

2.1.1.10 **Miscellaneous Offices, Lunch Room, Lavatories, and Change Rooms.** The offices, lunch room, lavatories, and change rooms are located on the first floor away from contaminated areas.

2.1.2 External Equipment and Structures

In addition to the equipment and structures housed within the 242-A and 242-AB Buildings, some external equipment and structures are required for 242-A Evaporator operation. These external units include the following:

- The 207-A retention basins
- Steam service supply
- Ventilation exhaust fans and HEPA filter housing
- Raw water service building.

2.1.2.1 **The 207-A Retention Basins.** The 207-A retention basins consist of six basins constructed of reinforced concrete, each having about 265,000 liters capacity. The north three basins are used to temporarily store non-contact steam condensate from the 242-A Evaporator for sampling before discharge to the 200 Area Treated Effluent Disposal Facility (TEDF). The three north basins are included in the 242-A Evaporator waste management unit. The three south basins previously held process condensate mixed waste for sampling and discharge. These basins have been removed from service, emptied, and will be closed under a separate closure plan.

2.1.2.2 Steam Service Supply. Steam needed for the 242-A Evaporator process is supplied by the 242A-BA package boiler annex. The boiler annex supplies medium pressure steam (620 kilopascals gauge pressure) and low pressure steam (69 kilopascals gauge pressure) to the 242-A Evaporator Building. The 242-BA boiler annex is not part of the 242-A Evaporator.

2.1.2.3 Ventilation Exhaust Fans and Filter Housing. The exhaust fans and the HEPA filter system are located north of the 242-A Evaporator. There is no dangerous or mixed waste associated with this exhaust system, which ventilates the various rooms within the building for contamination control.

2.1.2.4 Raw Water Service Building. The raw water service building (242-A-81) houses the valves and strainers for routing raw process water to the 242-A Evaporator. Columbia River water is supplied to the water service building from the 284-E Water Supply Reservoir. Water used to backflush strainers in the water service building is routed to TEDF. No dangerous or mixed waste is present in the raw water service building. The 284-E Water Supply Reservoir is not considered part of the 242-A Evaporator.

2.1.3 Other Environmental Permits

All environmental permits that are required to support operation of the 242-A Evaporator are identified in the *Annual Hanford Site Environmental Permitting Status Report* (e.g., DOE/RL-96-63).

2.1.4 Construction Schedule

Any proposed new construction for mixed waste operations will be managed as described in the Hanford Facility RCRA Permit.

2.2 TOPOGRAPHIC MAP [B-2]

A topographic map (Drawing H-13-000039) is located in Appendix 2A.

2.3 ROADWAY TRAFFIC TO THE 242-A EVAPORATOR [B-4]

General traffic information for the Hanford Facility is presented in the General Information Portion (DOE/RL-91-28). Access to the 242-A Evaporator is provided by 4th Street to the south and Canton Avenue to the east. These roads are constructed of bituminous asphalt that provides satisfactory all-weather access. Paved parking areas are provided for 242-A Evaporator personnel.

1.0 INTRODUCTION

This waste analysis plan (WAP) addresses analysis necessary to manage the waste at the 242-A Evaporator according to *Resource Conservation and Recovery Act* (RCRA) requirements included in the *Hanford Facility Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste* (Ecology and EPA 1994), *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement, Ecology et.al. 1996), Washington Administrative Code (WAC), Chapter 173-303, and Part 264 of the Code of Federal Regulations.

The WAP is included as Appendix 3A of the *242-A Evaporator Dangerous Waste Permit Application* (DOE/RL-90-42). Modifications of the WAP require modifications of the permit. Permit modifications are discussed in Section I.C of the Hanford Facility RCRA Permit and WAC 173-303-830.

1.1 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 RCRA requirements are included in 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.

1.2 SCOPE

This WAP discusses RCRA sampling and analysis of the waste in selected DST System tanks to determine the acceptability of the waste for processing at the 242-A Evaporator. Sampling and analysis of DST System waste for other reasons, such as preparation for tank-to-tank transfers, is included in the waste analysis plan for the DST System.

RCRA sampling of the process condensate transferred to the Liquid Effluent Retention Facility (LERF) can be performed at either 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 *Hanford Facility Dangerous Waste Permit Application, Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility* (DOE/RL-97-03, Appendix 3A).

Samples of other 242-A Evaporator waste streams, such as steam condensate, cooling water, and 242-A-81 backflush 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.

8.0 REFERENCES

ASTM, 1986, *Standard Practice for Sampling Industrial Chemicals*, ASTM E300-86, American Society for Testing and Materials, West Conshohocken, Pennsylvania, updated periodically.

ASTM, 1988, *Total and Organic Carbon in Water by High Temperature Oxidation and Coulometric Detection*, ASTM D4129-88, American Society for Testing and Materials, West Conshohocken, Pennsylvania, updated periodically.

AWWA, 1989, *Standard Methods for the Examination of Water and Wastewater*, 17th edition, American Public Health Association/America Water Works Association, Washington, D.C., updated periodically.

DOE/RL, 1988, *Hanford Facility Dangerous Waste Part A Permit Application*, DOE/RL-88-21, U.S. Department of Energy Richland Field Office, Richland, Washington, updated periodically.

DOE/RL-97-03, Hanford Facility *Dangerous Waste Permit Application, Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility*, Revision 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology and EPA, 1994, *Hanford Facility Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste*, Permit Number WA7890008967, Washington State Department of Ecology, Olympia, Washington and U.S. Environmental Protection Agency Region 10, Seattle Washington.

Ecology, EPA, and DOE, 1996, *Hanford Federal Facility Agreement and Consent Order*, as amended, Washington State Department of Ecology, Olympia, Washington, U.S. Environmental Protection Agency Region 10, Seattle, Washington, and U.S. Department of Energy Richland Operations Office, Richland, Washington.

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.

EPA, 1994b, *Data Quality Objectives Decision Error Feasibility Trials*, EPA QA/G-4D, Version 4.0, U.S. Environmental Protection Agency, Washington D.C.

This page intentionally left blank.

Hanford Facility RCRA Permit Modification Notification Forms

for

Part III, Chapter 1

616 Nonradioactive Dangerous Waste Storage Facility

THIS PAGE INTENTIONALLY
LEFT BLANK

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 2.1.3.4]

Description of Modification:

Page 2-7, Section 2.1.3.4, lines 1-8:

While in the operational mode, ~~E~~equipment and material stored in the packaging material and handling equipment area are as follows:

- Tools, drum dollies, forklift, and other waste handling equipment
- Absorbents and other miscellaneous spill control equipment.

~~Additional containers and absorbents are stored in the portable storage unit located approximately 50 feet (15.2 meters) north of the 616 NRDWSF (Figure 2-3).~~ A detailed list of equipment is included in the Building Emergency Plan - 616 Building provided in Appendix 7A.

Figure 2-3, Page F2-3: Corrected Figure F2-3 to reflect the change identified above.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. J. Svboda for C. G. Mattsson 3/27/98	Hilbert E. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 2.5.1]

Description of Modification:

Page 2-12, Section 2.5.1, lines 13-30:

2.5.1 Measures to Prevent Degradation of Groundwater Quality

Degradation of groundwater quality is prevented by storing waste containers inside an enclosed concrete building on self-contained, sealed concrete pads. In addition, the 616 NRDWSF accepts only those waste packages meeting appropriate U.S. Department of Transportation requirements. Containers are opened only in areas with spill containment. The 616 NRDWSF design and administrative controls significantly reduce the possibility of loss of waste to the ground and/or contamination of the groundwater. [In the vicinity of the 616 NRDWSF, the water table ranges from about 180 to 280 feet (54.9 to 85.3 meters) below the surface.]

Each loading pad trench drain plug is kept closed and secured when not in use. The 616 NRDWSF supervisor controls the trench key. When water (e.g., rainwater, snowmelt) from a known source has accumulated in either of the loading pad trenches, it is released to the ground via the french drain (Figure 2-6). While in the operational mode, ~~B~~ before ~~the~~ liquid is released, the following is performed.

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. J. Svoboda for 3/27/98	Arlen G. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 3.1]

Description of Modification:

Page 3-1, Section 3.1, lines 35-47:

Most of the nonradioactive dangerous waste received at the 616 NRDWSF consists of old (outdated) pure chemical products, spent dangerous waste sources, product mixtures in small laboratory quantities, and empty dangerous waste drums (WAC 173-303-160). Some waste regulated under the *Toxic Substances Control Act of 1976* (polychlorinated biphenyl) is received and stored at the 616 NRDWSF. Any waste listed in WAC 173-303-9903 - 9904, ~~or any dangerous waste mixture (WAC 173-303-084), or~~ any characteristic waste (WAC 173-303-090), or any criteria waste (WAC-173-303-100) could be generated on the Hanford Site. Waste normally can be characterized into 'U', 'P', 'F', 'D', ~~'WP', 'WC',~~ or 'W~~T~~' Ecology waste code designations by the use of manufacturers' product information, material safety data sheets, laboratory analysis, and such references as ~~40 CFR 302.4, *Dangerous Properties of Industrial Materials* (Sax 1984),~~ *the Registry of Toxic Effects of Chemical Substances* (NIOSH ~~1986), and *The Condensed Chemical Dictionary* (Sax and Lewis 1987)~~. Waste also is characterized in accordance with the requirements of 40 CFR 261 and 40 CFR 761.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: B.1.a.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards:
   1. Changes to waste sampling or analysis methods:
   a. To conform with agency guidance or regulations.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. G. Svoboda for 3/27/98	Allen G. Bilson 4/9/98	
C. G. Mattsson Date	T. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section]

Description of Modification:

Page T3-2, Table 3-2, line 15-21:

Table 3-2. Waste Codes of Materials Stored at the 616 Nonradioactive Dangerous Waste Storage Facility

U and P numbers	WAC-173-303-9903
F numbers	WAC-173-303-9904
W001	WAC-173-303-9904
D001	WAC-173-303-090(5)
D002	WAC-173-303-090(6)
D003	WAC-173-303-090(7)
D004 through D043	WAC-173-303-090(8)
WT01 and WT02	WAC-173-303-100~~1~~/104
WP01, WP02 and WP03	WAC-173-303-100~~2~~/104
~~WC02~~	~~WAC-173-303-103/104~~
~~WL01 and WL02~~	~~WAC-173-303-180~~

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards:
   1. Changes to waste sampling or analysis methods:
   a. To conform with agency guidance or regulations.

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:	
K. J. Voogde for	3/27/98	Helen E. Bilson	4/1/98		
C. G. Mattsson	Date	H. E. Bilson	Date		Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 4.1.1.1]

Description of Modification:

Page 4-1, Section 4.1.1.1, lines 19-35:

4.1.1.1 Description of Containers [D-1a(1)]. The 616 NRDWSF only accepts waste properly packaged in U.S. Department of Transportation-approved containers. These containers are chosen in accordance with pertinent regulations and are approved for that waste. Table 4-1 lists the most common types of containers [and applicable U.S. Department of Transportation specifications (49 CFR 178)] stored at the 616 NRDWSF.

All containers stored at the 616 NRDWSF are in an acceptable condition for each waste type (Chapter 2.0, Section 2.8.1). Because no containers are reconditioned on the Hanford Facility, there are no reconditioned containers at the 616 NRDWSF.

All waste containers received at the 616 NRDWSF are marked and labeled in accordance with the requirements specified under U.S. Department of Transportation regulations (49 CFR172). Marking and labeling requirements are specified on the hazardous waste disposal analysis record (Chapter 3.0, Section 3.2). In addition to the U.S. Department of Transportation marking and labeling requirements, all waste containers are marked as follows:

- 'PERSISTENT' - If a WP01, WP02, or WP03 waste code is applicable
- 'TOXIC' - If a WT01 or WT02 waste code is applicable
- ~~'CARCINOGENIC' - If a WC01 or WC02 waste code is applicable.~~

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: B.1.a.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards:
   1. Changes to waste sampling or analysis methods:
   a. To conform with agency guidance or regulations.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. J. Voogd for 3/27/98	4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section]

Description of Modification:

Page 4-1, Section 4.1.1.1, lines 19-35:

4.1.1.1 Description of Containers [D-1a(1)]. The 616 NRDWSF only accepts waste properly packaged in U.S. Department of Transportation-approved containers. These containers are chosen in accordance with pertinent regulations and are approved for that waste. Table 4-1 lists the most common types of containers [and applicable U.S. Department of Transportation specifications (49 CFR 178)] stored at the 616 NRDWSF.

All containers stored at the 616 NRDWSF are in an acceptable condition for each waste type (Chapter 2.0, Section 2.8.1). Because no containers are reconditioned on the Hanford Facility, there are no reconditioned containers at the 616 NRDWSF.

All waste containers received ~~at the 616 NRDWSF~~ are marked and labeled in accordance with the requirements specified under ~~U.S. Department of Transportation regulations (~~49 CFR172~~)~~. In addition to the 40 CFR 172 marking and labeling requirements, all waste containers must be marked, as appropriate, to adequately identify the major risk(s) associated with the contents of the containers, per WAC 173-303-630(3). ~~Marking and labeling requirements are specified on the hazardous waste disposal analysis record (Chapter 3.0, Section 3.2). In addition to the U.S. Department of Transportation marking and labeling requirements, all waste containers are marked as follows:~~

- ~~'PERSISTENT' - If a WP01, WP02, or WP03 waste code is applicable~~
- ~~'TOXIC' - If a WT01 or WT02 waste code is applicable~~
- 'CARCINOGENIC' - If a WC01 or WC02 waste code is applicable.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. G. Sobocka for 3/27/98	Allen G. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 6.2.1]

Description of Modification:

Page 6-2, Section 6.2.1, lines 13-19:

6.2.1 General Inspection Requirements [F-2a]

The content and frequency of inspections are described in this section. The inspections are documented on inspection datasheets and logsheets. The schedule and inspection records are kept at MO-720, in the 200 West Area ~~616 NRDWSF~~ in the inspection logbooks. Inspection records are retained for a minimum of 5 years.

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: B.3.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards
3. Changes in procedures for maintaining the operating record.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. G. Swroda for 3/27/98	Arlen E. Bilson 4/2/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 6.2.1.2]

Description of Modification:

Page 6-4, Section 6.2.1.2, lines 4-6:

When operating, ~~At least annually,~~ the emergency equipment cabinet will be opened and the contents examined for degradation, respiratory protection equipment exceeding certification date, and the contents restocked as needed, at least annually.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:	
K. J. Svoboda for	3/27/98	Helen E. Bilson	4/9/98		
C. G. Mattsson	Date	H. E. Bilson	Date		Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 6.2.1.2]

Description of Modification:

Page 6-4, Section 6.2.2.1, lines 14-17:

6.2.2.1 Container Inspection [F-2b(1)]. As required by WAC 173-303-630, specific items and/or problems identified during inspections are detailed in Section 6.2.1.2. The inspection records are maintained at MO-720, in the 200 West Area ~~616 NRDWSF~~ for 5 years.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: B.3.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards
   3. Changes in procedures for maintaining the operating record.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K-J. Svoboda for 3/27/98	Helen E. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 6.4.4]

Description of Modification:

Page 6-7, Section 6.4.4, lines 44-50:

6.4.4 Equipment and Power Failure [F-4d)

When waste management activities occur, the ~~The only~~ powered equipment available ~~at the 616 NRDWSF~~ is a forklift, fork truck lift, and the ventilation system. If the forklift or fork truck lift fails, the 616 NRDWSF supervisor makes the necessary notifications for repairs. Actions taken in response to a loss of ventilation are detailed in the building emergency plan (Appendix 7A).

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:	
K. G. Svoboda for C. G. Mattsson	3/27/98 Date	H. E. Bilson	4/9/98 Date		Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 12.4]

Description of Modification:

Page 12-3, Section 12.4, lines 5-11:

12.4 TREATMENT, STORAGE, AND/OR DISPOSAL REQUIREMENTS

The reporting and recordkeeping procedures for TSD units are discussed in this section. The TSD reports are described, the operating records and miscellaneous support records contents are described, and plans maintained at MO-720, in the 200 West Area ~~the 616 NRDWSF~~ and submitted with this permit application are described.

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: B.3.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards
   3. Changes in procedures for maintaining the operating record.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. J. Wolbrode for 3/27/98	4/9/98	
C. G. Mattsson — Date	H. E. Bilson — Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 12.4.1.5]

Description of Modification:

Page 12-5, Section 12.4.1.5, lines 1-31:

12.4.1.5 Contingency Plan Incident Notifications. The building emergency director and the 616 NRDWSF line management are responsible for making notifications (Chapter 2.0, Section 2.7.1 and Appendix 7A). Notifications of all emergency situations requiring contingency plan implementation are made as required by 40 CFR 264.56, WAC 173-303-360, and U.S. Department of Energy Order 5000.3A.

In the event of a fire or an explosion, the building emergency director or the 616 NRDWSF line management immediately must notify the Patrol Operations Center by telephone at 911. All emergency incident calls to the emergency number (911) are reported by the Patrol Operations Center to the Hanford Fire Department and the Occurrence Notification Center. In the event of an unplanned release of hazardous or dangerous waste or material, the building emergency director immediately notifies the contractor's environmental protection organization who notifies the DOE-RL and the Occurrence Notification Center. The DOE-RL must be notified by telephone as soon as possible on the day of the incident. The building emergency director or the 616 NRDWSF line management must document the incident on an Occurrence Report to the DOE-RL within 24 hours of categorization of the incident. A copy of the occurrence reports is retained at MO-720, in the 200 West Area ~~the 616 NRDWSF~~ as part of the operating record.

If the 616 NRDWSF stops operations in response to a fire, an explosion, or a release that could present a hazard to human health or the environment, the building emergency director notifies DOE-RL, via line management, when the 616 NRDWSF is operational and emergency cleanup is complete.

The DOE-RL is responsible for three types of notifications: an immediate notification, the incident assessment report, and the unit restart notification. Details of these notifications are provided in the following sections.

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: B.3.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards
   3. Changes in procedures for maintaining the operating record.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. J. Voboda for 3/27/98	Julie E. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 12.4.1.6]

Description of Modification:

Page 12-6, Section 12.4.1.6, lines 40-53:

12.4.1.6 Spills, Discharges, and Leaks Reports. This section discusses the reports prepared as a result of unpermitted spills and discharges to the environment.

In the event of any unplanned release of dangerous waste or hazardous substance, the building emergency director immediately notifies the contractor's environmental protection organization and the Occurrence Notification Center. The Occurrence Notification Center immediately will notify the Hanford Fire Department for appropriate action. The building emergency director documents the incident on an occurrence report. A copy of the occurrence report is retained at MO-720, in the 200 West Area ~~the 616 NRDWSF~~. If an unpermitted spill or discharge exceeds the threshold or reportable quantities, the contractor's environmental protection organization performs the reporting necessary to

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: B.3.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards
   3. Changes in procedures for maintaining the operating record.

Submitted by Co-Operator:	Reviewed by RL/Program Office:	Reviewed by Ecology:
K. G. Svoboda for 3/27/98	Adam G. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 12.4.2]

Description of Modification:

Page 12-7, Section 12.4.2, lines 42-48:

12.4.2 Recordkeeping Requirements

Records retained by the 616 NRDWSF at MO-720, in the 200 West Area include plans described in other portions of this permit application, operating records, miscellaneous support records, and records of reports made to the regulatory authority. These records are described in the following sections.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: B.3.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards
3. Changes in procedures for maintaining the operating record

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K.G. Woods for 3/27/98	4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 12.4.2.1]

Description of Modification:

Page 12-8, Section 12.4.2.1, lines 1-20:

12.4.2.1 Permit Application Plans. Plans described in other portions of this permit application and retained at MO-720, in the 200 West Area ~~the 616 NRDWSF~~ include the following:

- Waste analysis plan
- Contingency plan and amendments
- Training plan
- Closure plan
- Inspection schedule and logs ~~plans~~.

Copies of these plans are included in this permit application. These plans are maintained at MO-720, in the 200 West Area ~~the 616 NRDWSF~~ during the life of the storage unit. Modifications or amendments required as a result of changing regulatory or operational requirements will be submitted to the regulatory authority and added to the plans maintained at MO-720, in the 200 West Area ~~the 616 NRDWSF~~ as required.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: B.3

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards
3. Changes in procedures for maintaining the operating record.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. G. Svoboda for 3/27/98	4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 12.4.2.2]

Description of Modification:

Page 12-8, Section 12.4.2.2, lines 22-40:

12.4.2.2 Operating Records. Operating records maintained at MO-720, in the 200 West Area ~~the 616 NRDWSF~~ include the following:

- Description and the quantity of each dangerous waste received and the method(s) and date(s) of storage at the 616 NRDWSF in accordance with 40 CFR 264 Appendix I and WAC 173-303-380
- Location of each dangerous waste stored within the storage unit and the quantity at each location
- Waste analyses results
- Contingency plan incident reports
- Inspection records
- Waste minimization certification
- Land disposal restriction records.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: B.3.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards
3. Changes in procedures for maintaining the operating record.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. J. Svoboda for 5/27/98	6/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 12.4.2.2.3]

Description of Modification:

Page 12-9, Section 12.4.2.2.3, lines 1-7:

12.4.2.2.3 Waste Analysis. Waste analysis records maintained at MO-720, in the 200 West Area ~~the 616 NRDWSF~~ are generated only when waste resulting from a spill or leak cannot be identified. All other waste analysis is performed by, and records maintained by, onsite generating units (Chapter 3.0). Records of all the information necessary for treating or disposing of the waste are maintained. Analyses are repeated, as necessary, to ensure accuracy and validity.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: B.3.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards
3. Changes in procedures for maintaining the operating record.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. G. Mattsson for 3/27/98	Helen E. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 12.4.2.2.5]

Description of Modification:

Page 12-9, Section 12.4.2.2.5, lines 18-28:

12.4.2.2.5 Inspection Records. Records of the 616 NRDWSF general inspections are maintained at MO-720, in the 200 West Area ~~the storage unit~~ for at least 5 years from the inspection date. The records include the following:

- The date and time of inspection
- The inspector's printed name and handwritten signature
- Notations of observations
- The date and nature of any repairs or other remedial actions.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: B.3.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards
3. Changes in procedures for maintaining the operating record..

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. J. Svoboda for 3/27/98	Julia E. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 12, Table 12-1]

Description of Modification:

Page T12-1.3, Table 12-1, Sheet 2 of 3, lines 4-18:

TREATMENT, STORAGE, AND/OR DISPOSAL REPORTS AND RECORDS:

Permit Application Plans:		
Waste analysis plan	Life of 616 NRDWSF	MO-720, 200 West Area~~616 NRDWSF~~
Contingency plan and amendments	Life of 616 NRDWSF	MO-720, 200 West Area~~616 NRDWSF~~
Training plan	Life of 616 NRDWSF	MO-720, 200 West Area~~616 NRDWSF~~
Closure plan	Life of ~~616 NRDWSF~~ Hanford Facility	MO-720, 200 West Area~~616 NRDWSF~~
Postclosure plan	Not required	NA
Inspection schedule and log ~~plans~~	Life of 616 NRDWSF	MO-720, 200 West Area~~616 NRDWSF~~
Operating Reports and Records:		
Waste description and quantity	Life of 616 NRDWSF	MO-720, 200 West Area~~616 NRDWSF~~
Waste location	Until closure	MO-720, 200 West Area~~616 NRDWSF~~
Waste analysis data	Life of 616 NRDWSF	MO-720, 200 West Area~~Hanford Facility~~
Inspection records	Varies from 5 years from inspection date to life of 616 NRDWSF	MO-720, 200 West Area~~Hanford Facility~~
Certification of waste minimization efforts	Life of 616 NRDWSF	MO-720, 200 West Area~~616 NRDWSF~~

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: B.3.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards
3. Changes in procedures for maintaining the operating record.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. J. Voogde for 3/27/98	Hilbert E. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1 [Section 12, Table 12-1]

Description of Modification:

Page T12-1.3, Table 12-1, Sheet 3 of 3, lines 11-39:

Contingency Plan Incident Reports and Records:		
Immediate notification--		
Occurrence Report	Life of 616 NRDWSF	MO-720, 200 West Area~~616 NRDWSF~~
Assessment report	Life of 616 NRDWSF	MO-720, 200 West Area~~616 NRDWSF~~
616 NRDWSF restart notification	Life of 616 NRDWSF	MO-720, 200 West Area~~616 NRDWSF~~
Spills, Discharges, and Leaks Reports and Records:		
Immediate notification	Life of 616 NRDWSF	MO-720, 200 West Area~~616 NRDWSF~~
Closure Reports and Records:		
Certification of closure	Life of 616 NRDWSF	Hanford Facility
Survey plat	Not required	NA
Closure cost estimates (latest)	Life of 616 NRDWSF	Hanford Facility
Postclosure Reports and Records:		
None required	Not required	NA
Miscellaneous Support Reports and Records:		
Annual report	Life of 616 NRDWSF	Hanford Facility
Biennial report	Not required	NA
Training documentation	Life of 616 NRDWSF	MO-720, 200 West Area~~616 NRDWSF~~
Liability coverage documentation	Not required	NA

NA = not applicable.

Note: At the time of closure, all 616 NRDWSF environmental records will be transferred to a Hanford Facility central retention area. * Hanford Facility means the reports and records are available through the Facility Regulatory File index pursuant to Section 12.0. Until the index is implemented, reports and records will be available at the Facility, but not necessarily at the 616 NRDWSF.

~~616 NRDWSF means the reports and records are available at the 616 NRDWSF office.~~

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: B.3.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

B. General Facility Standards
3. Changes in procedures for maintaining the operating record.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. G. Svoboda for 3/27/98	Helen E. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Part III, Chapter 1

616 Nonradioactive Dangerous Waste Storage Facility

Page Changes

THIS PAGE INTENTIONALLY
LEFT BLANK

While in the operational mode equipment and material stored in the packaging material and handling equipment area are as follows:

- Tools, drum dollies, forklift, and other waste handling equipment
- Absorbents and other miscellaneous spill control equipment.

A detailed list of equipment is included in the Building Emergency Plan - 616 Building provided in Appendix 7A.

2.1.3.5 Receiving Area. The receiving area, in the east end of the 616 NRDWSF (Figure 2-3), is a corridor used when transferring waste from the east loading area to the storage cells. Waste containers that are leaking or of questionable integrity sometimes are overpacked in this area. Compatible waste with incomplete paperwork also shall be staged in this area while discrepancies are resolved. Because of the types of activities that are performed in the receiving area, the area has the following additional features:

- Sealed concrete floor that slopes to a 252-gallon (953.9-liter) trench for the collection of liquid from spills or leaks that might inadvertently enter the area (actions to be taken in response to a spill or discharge are detailed in the Building Emergency Plan - 616 Building provided in Appendix 7A)

- Same fire protection system as previously described for the storage cells

- One and a half-hour fire-rated rollup doors at each end of the corridor.

2.1.3.6 Loading and Unloading Areas. The 616 NRDWSF has two loading and unloading areas (Figure 2-3). The primary loading and unloading area is a 20- by 30-foot (6.1- by 9.1-meter) sealed concrete slab with a 13- by 20-foot (4.0- by 6.1-meter) approach ramp. The primary loading and unloading area, located at the east end of the 616 NRDWSF, is provided for incoming and outgoing dangerous waste transfers. The slab is sloped to a trench for liquid collection. The trench has a drain (with a locking removable plug) that connects to a french drain (Figure 2-6) for the release of accumulated water (e.g., rainwater, snowmelt) (Section 2.5.1). Design drawings of the french drain are provided in Appendix 4B. The slab and ramp are surrounded by a curb with the exception of the ramp entry, which is at the high point of the slope. The curb provides containment and channels liquid to the collection trench in this area. A mechanical fork truck lift and associated safety equipment (guards, handrails, etc.) are mounted on the containment pad. Design drawings of the mechanical fork truck lift are provided in Appendix 4B.

The secondary loading and unloading area [a 25-foot 6-inch by 20-foot (7.8- by 6.1-meter) slab with a 13- by 20-foot (4.0- by 6.1-meter) approach ramp] is located outside the combustible cell on the north side of the 616 NRDWSF. The secondary loading and unloading area is of identical

construction to the primary loading and unloading area. This secondary loading and unloading area is a redundant system and is not used under normal operating conditions.

The containment trenches are kept free of excess water when the 616 NRDWSF is in operation. In the event that a dangerous waste spill occurs on either of the loading areas, the released material will be recaptured to the greatest extent possible using pumps, absorbents, or alternate methods. Any additional liquids used to decontaminate the spill area will be containerized and managed as specified in Chapter 3.0. Wipe samples will be performed to determine cleanup adequacy (Chapter 4.0, Section 4.1.1.8). Water (e.g., rainwater, snowmelt) accumulated in the trench before completion of the laboratory analysis or wipe samples also will be containerized. Accumulated water will be sampled and characterized if the initial wipe samples determine that the cleanup was inadequate. Actions to be taken in response to a spill or discharge are detailed in the Building Emergency Plan - 616 Building provided in Appendix 7A. Water accumulated in the 'clean' or 'spill free' loading and unloading area trenches will be drained to the french drain system (Section 2.5.1).

2.2 TOPOGRAPHIC MAPS [B-2]

A topographic map, showing a distance of at least 1,000 feet (305 meters) around the 616 NRDWSF, is located in Appendix 2A (Drawing H-13-000014). This map is at a scale of 1 unit equals 2,000 units. The contour interval clearly shows the pattern of surface water flow in the vicinity of the 616 NRDWSF. The map contains the following information:

- Map scale
- Date
- Prevailing wind speed and direction
- A north arrow
- Surrounding land use
- Legal boundaries of the 616 NRDWSF
- Access road location
- Access control
- Location of the 616 NRDWSF.

A legal description of the 616 NRDWSF site is provided in Appendix 2A.

2.3 LOCATION INFORMATION [B-3]

This section describes the location of the 616 NRDWSF in relation to seismic, floodplain, and shoreline considerations.

loading represents a two-axle tractor [front axle loading of 8,000 pounds (3,628.7 kilograms) and rear axle loading of 32,000 pounds 14,515 kilograms)] plus a single-axle trailer with a 32,000-pound (14,515-kilograms) axle loading.

2.4.2 The 616 Nonradioactive Dangerous Waste Storage Facility Roadways

The 616 NRDWSF is located approximately 200 feet (61 meters) north of Route 3 (Figure 2-2). The access road from Route 3 to the 616 NRDWSF has a graded gravel surface with an underlying aggregate base. This surface may be paved to control dust. Drawing H-13-000014 in Appendix 2A shows the 616 NRDWSF access road configuration.

2.4.3 Traffic Control Signs, Signals, and Procedures

Standard traffic control signs are used throughout the Hanford Site (e.g., hexagonal stop signs, triangular yield signs). The only traffic light in the vicinity of the 616 NRDWSF is a flashing amber warning light in front of the 609-A Fire Station on Route 3 (Figure 2-2). The light is switched to red whenever an emergency requires a rapid response from the Hanford Fire Department.

Speed limits are posted throughout the Hanford Site, and the maximum posted speed is 55 miles (88.5 kilometers) per hour on major thoroughfares. Inside the 200 East and 200 West Areas, posted speeds are reduced to a maximum of 35 miles (56.3 kilometers) per hour, and held to speeds as low as 15 miles (24.1 kilometers) per hour.

2.5 PERFORMANCE STANDARDS [B-5]

The 616 NRDWSF is designed to minimize the exposure of personnel to dangerous waste and hazardous substances and to prevent dangerous waste and hazardous substances from reaching the environment.

In addition, measures are taken to ensure that the 616 NRDWSF is maintained and operated in a manner that prevents:

- Degradation of groundwater quality
- Degradation of air quality by open burning or other activities
- Degradation of surface water quality
- Destruction or impairment of flora or fauna outside of the 616 NRDWSF
- Excessive noise
- Negative aesthetic impacts

- Unstable hillsides or soils

- Use of processes that do not treat, detoxify, recycle, reclaim, and recover waste material to the extent economically feasible

- Endangerment to the health of employees or the public near the 616 NRDWSF.

The measures taken to prevent each of the above negative effects from occurring are described in the following sections.

2.5.1 Measures to Prevent Degradation of Groundwater Quality

Degradation of groundwater quality is prevented by storing waste containers inside an enclosed concrete building on self-contained, sealed concrete pads. In addition, the 616 NRDWSF accepts only those waste packages meeting appropriate U.S. Department of Transportation requirements. Containers are opened only in areas with spill containment. The 616 NRDWSF design and administrative controls significantly reduce the possibility of loss of waste to the ground and/or contamination of the groundwater. [In the vicinity of the 616 NRDWSF, the water table ranges from about 180 to 280 feet (54.9 to 85.3 meters) below the surface.]

Each loading pad trench drain plug is kept closed and secured when not in use. The 616 NRDWSF supervisor controls the trench key. When water (e.g., rainwater, snowmelt) from a known source has accumulated in either of the loading pad trenches, it is released to the ground via the french drain (Figure 2-6). While in the operational mode, before liquid is released, the following is performed.

1. Liquid is visually inspected for signs of contamination and analyzed to determine the presence of contaminants.

2. Daily inspection reports and the 616 NRDWSF logbook are reviewed to identify any spills on the pad.

3. Cleanup reports are reviewed to verify that the pad is clean (Section 2.7.2.1).

4. The 616 NRDWSF supervisor contacts solid waste management and reviews steps 1 through 3 above. Solid waste management gives concurrence.

5. The 616 NRDWSF supervisor signs the logbook indicating that the above steps have been completed and that the pad is clean (Section 2.7.2.1). The solid waste management contact is noted in the logbook.

6. The 616 NRDWSF supervisor or designee unlocks the drain plug.

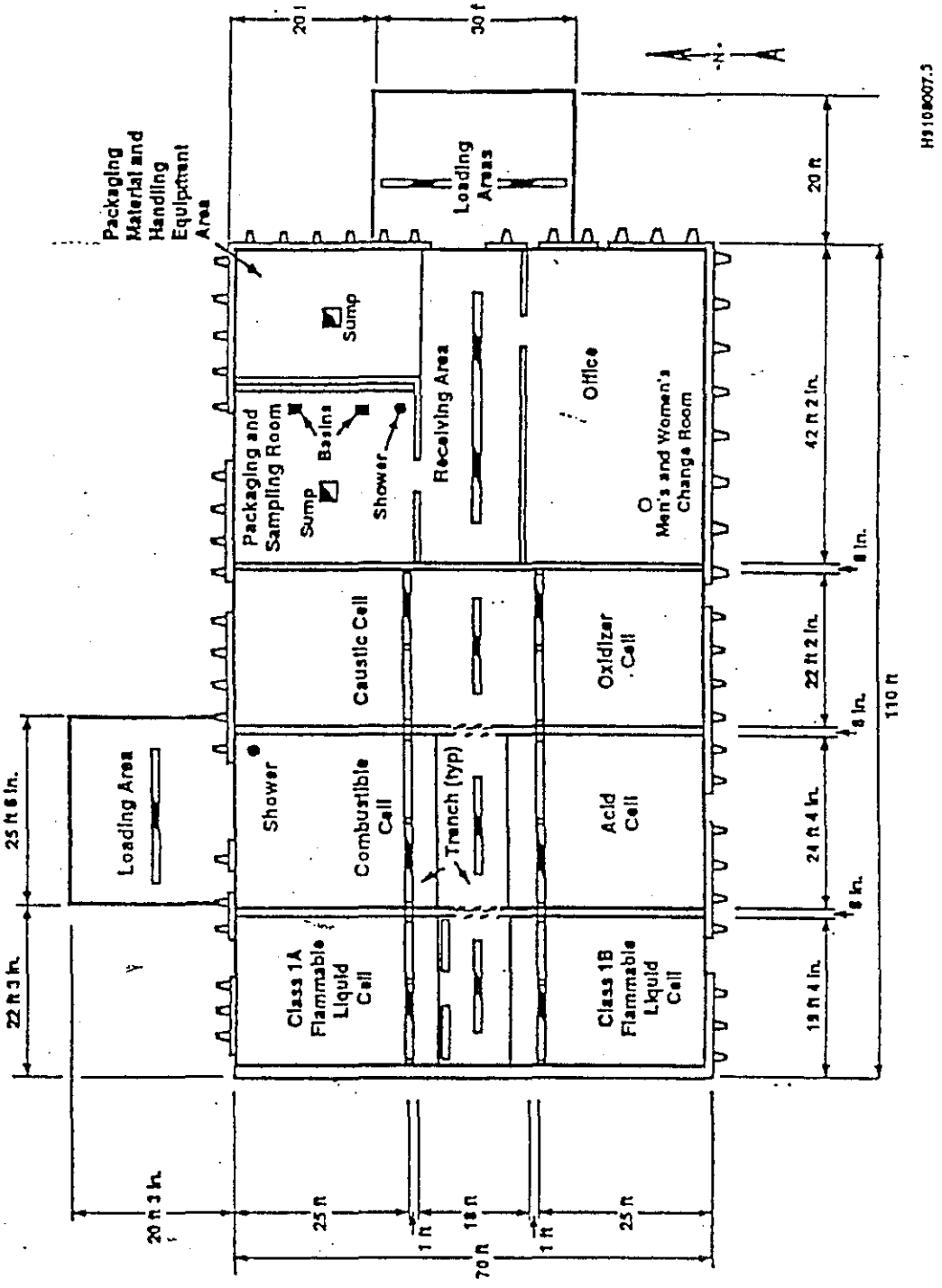


Figure 2-3. The 616 Nonradioactive Dangerous Waste Storage Facility Floor Plan.

THIS PAGE INTENTIONALLY
LEFT BLANK

3.0 WASTE CHARACTERISTICS [C]

This chapter provides information on the physical, chemical, and biological characteristics of the waste stored at the 616 NRDWSF. A waste analysis plan is included that describes the methodology used for determining waste types.

3.1 CHEMICAL, BIOLOGICAL, AND PHYSICAL ANALYSIS [C-1]

The 616 NRDWSF stores nonradioactive dangerous waste that is received from generating units located on the contiguous Hanford Facility and from DOE-RL owned and operated generators located on noncontiguous areas near the Hanford Facility (e.g., Federal Building and the 712 Building in downtown Richland and the 3000 Area). This waste is stored in the 616 NRDWSF until it is transported to an offsite TSD Facility. Waste normally is received in U.S. Department of Transportation 5-, 30-, and 55-gallon (18.9-, 113.6-, and 208-liter) containers, but also can be received in other U.S. Department of Transportation-approved containers such as wooden or fiberboard boxes (Table 3-1). No waste is accepted at the 616 NRDWSF in bulk loads (e.g., tank trucks, dump trucks, etc).

The 616 NRDWSF receives nonradioactive dangerous waste from DOE-RL owned and operated processing, testing, maintenance, and construction activities. The DOE-RL and Hanford Site contractors have implemented control procedures to ensure that proper waste identification, packaging, and Ecology designation are attained (Section 3.2). Figure 3-1 illustrates the process for handling containerized nonradioactive dangerous waste. Chemical, biological, and physical analyses of the dangerous waste to be handled at 616 NRDWSF pursuant to WAC 173-303-806(4)(a), entitled "616 Nonradioactive Dangerous Waste Facility Off-Site Shipping Lists," is found in Attachment 9 of the RCRA Permit.

Most of the nonradioactive dangerous waste received at the 616 NRDWSF consists of old (outdated) pure chemical products, spent dangerous waste sources, product mixtures in small laboratory quantities, and empty dangerous waste drums (WAC 173-303-160). Some waste regulated under the *Toxic Substances Control Act of 1976* (polychlorinated biphenyl) is received and stored at the 616 NRDWSF. Any waste listed in WAC 173-303-9903 - 9904, any characteristic waste (WAC 173-303-090), or any criteria waste (WAC-173-303-100) could be generated on the Hanford Site. Waste normally can be characterized into 'U', 'P', 'F', 'D', or 'W' Ecology waste code designations by the use of manufacturers' product information, material safety data sheets, laboratory analysis, and such reference as *the Registry of Toxic Effects of Chemical Substances* (NIOSH). Waste also is characterized in accordance with the requirements of 40 CFR 261 and 40 CFR 761.

It is the responsibility of the generating units to completely and correctly identify the dangerous constituents of their waste. Based on waste identification information provided by the generating unit's waste coordinator, the solid waste management staff designates the waste in accordance with WAC 173-303-070. The solid waste management staff maintains auditable copies of the following for each waste stored at the 616 NRDWSF, as applicable:

- All records providing a description of the waste
- Documentation identifying the dangerous characteristics of the waste
- The basis for waste designation
- Laboratory reports with chemical, biological, and physical analysis of samples
- Waste tracking forms/or Uniform Hazardous Waste Manifest.
- For wastes shipped to offsite TSD facilities, land disposal restriction documentation (Chapter 12.0, Section 12.4.2.2.7).

The generating unit and the 616 NRDWSF maintain copies of the waste tracking forms/or Uniform Hazardous Waste Manifest and associated documents [i.e., hazardous waste disposal analysis record (Section 3.2)] identifying the waste characteristics and assigned waste designations.

In general, each package is unique and new containers continuously are being accepted for storage. In 1990, the 616 NRDWSF received 1,932 containers in 94 shipments, an average shipment being 20 containers every 4 to 5 days. The 616 NRDWSF accepts waste for storage with the waste codes identified in Table 3-2, excluding explosive, shock-sensitive (Section 4.1.4.1), class IV oxidizer [in waste volumes greater than 10 pounds (4.5 kilograms)] and radioactive waste. The 616 NRDWSF also can store containerized *Toxic Substances Control Act* regulated waste.

Nonradioactive dangerous waste is shipped to an appropriate permitted TSD facility. The waste is designated according to Ecology regulations for waste designation outlined in WAC 173-303-070.

3.1.1 Containerized Waste [C-1a]

The 616 NRDWSF does use a secondary containment system (Chapter 4.0, Section 4.1.1.3). Therefore, the requirements of WAC 173-303-630(7)(c) are not applicable to the 616 NRDWSF.

Table 3-1. Common Containers Stored at the 616 Nonradioactive Dangerous Waste Storage Facility.

DOT[a] Spec.	Container	Material	Ref.[b] (49 CFR 178)
12P/12U (UN6HG2)	CF[c] w/inner poly liner	Fiberboard/polyethylene	178. 522
12B (UN4G1)	CF	Fiberboard	178.516
17C (UN1A1)	DM[d]	Low carbon steel	178.504
17E (UN1A1)	DM	Low carbon steel	178.504
17H (UN1A2)	DM	Low carbon steel	178.504
34 (UN1A1)	DF[e]	Polyethylene	178.509
37A (UN1A1)	DM	Low carbon steel	178.504
37B (UN1A1)	DM	Low carbon steel	178.504

[a]U.S. Department of Transportation specifications.
[b]Reference section of regulations.
[c]CF = fiberboard box.
[d]DM = drum, metal.
[e]DF = drum, fiberboard.

Table 3-2. Waste Codes of Materials Stored at the 616 Nonradioactive Dangerous Waste Storage Facility.

Waste codes	Reference
U and P numbers	WAC-173-303-9903
F numbers	WAC-173-303-9904
W001	WAC-173-303-9904
D001	WAC-173-303-090(5)
D002	WAC-173-303-090(6)
D003	WAC-173-303-090(7)
D004 through D043	WAC-173-303-090(8)
WT01 and WT02	WAC-173-303-100/104
WP01, WP02 and WP03	WAC-173-303-100/104

4.0 PROCESS INFORMATION [D]

This chapter discusses the processes used to store containers at the 616 NRDWSF.

4.1 CONTAINERS [D-1]

The following sections describe the type of containers stored at the 616 NRDWSF. The construction specification for this storage unit is provided in Appendix 4A.

4.1.1 Containers with Free Liquids [D-1a]

Containers with free liquid are discussed in the following sections.

4.1.1.1 Description of Containers [D-1a(1)]. The 616 NRDWSF only accepts waste properly packaged in U.S. Department of Transportation-approved containers. These containers are chosen in accordance with pertinent regulations and are approved for that waste. Table 4-1 lists the most common types of containers [and applicable U.S. Department of Transportation specifications (49 CFR 178)] stored at the 616 NRDWSF.

All containers stored at the 616 NRDWSF are in an acceptable condition for each waste type (Chapter 2.0, Section 2.8.1). Because no containers are reconditioned on the Hanford Facility, there are no reconditioned containers at the 616 NRDWSF.

All waste containers received are marked and labeled in accordance with the requirements specified under 49 CFR172. In addition to the 40 CFR 172 marking and labeling requirements, all waste containers must be marked, as appropriate, to adequately identify the major risk(s) associated with the contents of the containers, per WAC 173-303-630(3).

4.1.1.2 Container Management Practices [D-1a(2)]. The 616 NRDWSF is designed with two different types of cells: regular storage and flammable liquid storage (Chapter 2.0, Figure 2-3). The details for each cell are provided in Table 4-2.

Before being accepted at the 616 NRDWSF for storage, each container is inspected (Chapter 2.0, Section 2.8.1) for the following:

- Container condition
- Container seal

- Proper marking and labeling
- Valid radiological release.

On being accepted for storage at the 616 NRDWSF, containers are unloaded in accordance with the requirements of Chapter 6.0, Section 6.4.1, and moved to the proper storage cell as described on the hazardous waste disposal analysis record (Chapter 3.0, Section 3.2). The containers are moved on drum dollies or by a pallet jack or by a forklift if pallatized (the forklift is prohibited from operating in the Class 1-A flammable liquid cell). The containers are placed in the assigned storage cell, with the containers being placed in one of the storage locations painted on the cell floor (Chapter 6.0, Figure 6-3 provides storage locations). The location of the container is logged on a locator chart and input into the 616 NRDWSF waste tracking system. This system identifies the location of each container stored in the 616 NRDWSF. Waste packages can be stacked in any storage cell. Table 4-3 identifies the stacking restrictions for each cell.

The containers can be stacked either by hand or machine (e.g., forklift). Containers stacked by hand are placed next to the containers on which the containers are to be stacked. The container is lifted and placed onto the base container, taking care not to damage either container. The 616 NRDWSF supervisor is responsible for ensuring that all lifts are done in accordance with applicable safety requirements. No personnel are allowed to lift a waste container in a manner that jeopardizes them or other personnel. As a guideline, hand stacking weight limits do not exceed 65 pounds (29.5 kilograms) per male employee and 45 pounds (20.4 kilograms) per female employee.

The lifting of containers having a gross weight that exceeds the weight limit identified for an individual can be stacked by two employees or by mechanical means. Containers having a gross weight exceeding 130 pounds (59.1 kilograms) must be stacked by mechanical means. Mechanically stacked containers must be placed on a pallet or similar dunnage to properly distribute the load to base containers. Containers stacked using pallets always will have four base containers of the same height under them.

Containers are closed during normal operations and are not handled or stored in a manner that might damage the packaging. The containers are inspected daily (when the storage unit is occupied) for degradation and leakage. Activities restricted to the office area do not require a daily inspection of the storage area, provided the ventilation system is fully operational. A weekly inspection of the 616 NRDWSF and its waste inventory, regardless of occupation (Chapter 6.0, Section 6.2.1.2) is performed.

In preparation for shipment of waste from the 616 NRDWSF to an offsite TSD facility, containers are identified for shipment from the 616 NRDWSF inventory tracking system. A completed offsite manifest and a list of waste proposed for shipment are transmitted to transportation personnel and a contracted offsite TSD facility for review. Review comments are dispositioned to the satisfaction of all parties. The 616 NRDWSF personnel mark the containers with the offsite manifest number. Solid waste management prepares a letter that accompanies the waste shipment addressing the land disposal

6.0 PROCEDURES TO PREVENT HAZARDS [F]

The 616 NRDWSF is designed and operated to minimize exposure of the general public and operating personnel to dangerous waste.

6.1 SECURITY [F-1]

The following sections describe the security measures, equipment, and warning signs used to control entry into the 616 NRDWSF.

6.1.1 Security Procedures and Equipment [F-1a]

The following sections describe the 24-hour surveillance system, barrier, and warning signs used to provide security and control access to the 616 NRDWSF.

6.1.1.1 24-hour Surveillance System [F-1a(1)]. 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 material. The Hanford Patrol maintains a continuous presence of protective force personnel to provide additional security.

6.1.1.2 Barrier and Means to Control Entry [F-1a(2),(2a),(2b)]. Manned barricades are maintained around the clock at checkpoints on vehicular access roads leading to the operational areas of the Hanford Facility. All personnel accessing these areas must have a U.S. Department of Energy-issued security identification badge indicating the appropriate authorization. Personnel also might be subject to a search of items carried into or out of these areas.

The 616 NRDWSF could be occupied at any time. The 616 NRDWSF is locked when unoccupied.

6.1.1.3 Warning Signs [F-1a(3)]. Warning signs stating "DANGER--UNAUTHORIZED PERSONNEL KEEP OUT" are posted at each entrance to the active portion of the 616 NRDWSF. These signs are in English, legible from a distance of 25 feet (7.6 meters) and visible from all angles of approach.

6.1.2 Waiver [F-1b,b(1),b(2)]

Waiver of the security procedures and equipment requirements for the 616 NRDWSF will not be requested. Therefore, the requirements of WAC 173-303-310 are not applicable to the 616 NRDWSF.

6.2 INSPECTION SCHEDULE [F-2]

This section describes the method and schedule for inspection of the 616 NRDWSF. The purpose of inspection procedures at the 616 NRDWSF is to identify leaking containers, improperly stored containers, and degradation of containment and safety equipment and/or systems. These inspections help ensure that situations do not exist that could cause or lead to the release of dangerous waste to the environment or pose a threat to human health. Abnormal conditions identified by an inspection must be corrected on a schedule that prevents hazards to workers, the public, and the environment.

6.2.1 General Inspection Requirements [F-2a]

The content and frequency of inspections are described in this section. The inspections are documented on inspection datasheets and logsheets. The schedule and inspection records are kept at MO-720, in the 200 West Area in the inspection logbooks. Inspection records are retained for a minimum of 5 years.

6.2.1.1 Types of Problems [F-2a(1)]. Each day the 616 NRDWSF is occupied for the purpose of waste handling, a nuclear operator performs a daily inspection of areas subject to spills (e.g., loading and unloading areas and waste handling areas).

Weekly inspections are performed to ensure operation and management of the 616 NRDWSF is in accordance with WAC 173-303-630. These items are listed in Section 6.2.1.2.

The fire systems at the 616 NRDWSF are inspected annually by representatives of the Hanford Fire Department. Their inspection includes the following:

- Fire protection system inspection and testing
  - Fire alarm pull box inspection and test
  - Manual and automatic fire door inspection and test
- Wet-pipe sprinkler system inspection and testing
  - System visual inspection
  - System internal inspection
  - Pressure of incoming water supply inspection
  - Condition of gages by visual inspection
  - Flow alarm device testing
  - Zone indicated on fire alarm control panel by visual inspection
- Ignitable or reactive waste storage area inspection.

The 616 NRDWSF supervisor conducts a monthly inspection and test of the communication and alarm systems. This inspection and test includes the following:

- Storage building evacuation alarms
- Storage building take cover alarms
- Public address system
- Portable radios and base station
- Crash alarm.

6.2.1.2 Frequency of Inspections [F-2a(2)]. Each day the 616 NRDWSF is occupied for the purpose of waste handling, a nuclear operator performs an inspection of the loading/unloading areas and waste handling areas. During this inspection, the following items are addressed as required by WAC 173-303-630:

- Curbing is in good condition
- Pads/loading areas are crack free
- Trenches/sumps are locked closed, empty, and crack free
- Spill kit seal is intact
- Overpack containers are present.

The inspection results are recorded in the daily logbook.

Weekly inspections are performed to ensure operation and management of the 616 NRDWSF is in accordance with WAC 173-303-630. If the 616 NRDWSF has no containerized waste in storage, weekly inspections would not be conducted. A knowledgeable person cognizant of the 616 NRDWSF operations performs the weekly inspection and completes the inspection form (Figure 6-1). Discrepancies are noted in the comments section. Items inspected include the following:

- Condition of concrete floor, walls, and curbing
- Storage building structural integrity
- Safety equipment operational and in place
- Fire extinguishers in place
- Lights and fixtures
- Appropriate safety and packaging equipment
- Container structural integrity
- Secondary containment systems integrity
- Containers closed
- Corrosion of containers
- Evidence of spills or leaks
- Container labels and markings in place
- Container storage locations
- Proper aisle space
- Materials wrapped in plastic for signs of deterioration.

As required by WAC 173-303-395, an annual inspection of the 616 NRDWSF areas where ignitable or reactive waste is stored is performed by a professional knowledgeable of the Uniform Fire Code. The following information is entered into the 616 NRDWSF logbook as a result of this inspection:

- The date and time of the inspection
- The name of the person who performed the inspection

- A notation of the observations made
- Any remedial actions that were taken as a result of this inspection.

When operating, the emergency equipment cabinet will be opened and the contents examined for degradation, respiratory protection equipment exceeding certification date, and the contents restocked as needed, at least annually.

6.2.2 Specific Process Inspection Requirements [F-2b].

The following sections detail the inspections to be performed at the 616 NRDWSF.

6.2.2.1 Container Inspection [F-2b(1)]. As required by WAC 173-303-630, specific items and/or problems identified during inspections are detailed in Section 6.2.1.2. The inspection records are maintained at MO-720, in the 200 West Area for 5 years.

6.2.2.2 Tank Inspection [F-2b(2),(2)a-(2)f]. Operation of the 616 NRDWSF does not involve the placement of dangerous waste in tanks. Therefore, the inspection requirements of WAC 173-303-640 are not applicable to the 616 NRDWSF.

6.2.2.3 Waste Pile Inspection [F-2b(3),(3)a-(3)d]. Operation of the 616 NRDWSF does not involve the placement of dangerous waste in piles. Therefore, the inspection requirements of WAC 173-303-660 are not applicable to the 616 NRDWSF.

6.2.2.4 Surface Impoundment Inspection [F-2b(4),(4)a-(4)b]. Operation of the 616 NRDWSF does not involve the placement of dangerous waste in surface impoundments. Therefore, the inspection requirements of WAC 173-303-650 are not applicable to the 616 NRDWSF.

6.2.2.5 Incinerator Inspection [F-2b(5),(5)a-(5)b]. Operation of the 616 NRDWSF does not involve the incineration of dangerous waste. Therefore, the inspection requirements of WAC 173-303-670 are not applicable to the 616 NRDWSF.

6.2.2.6 Landfill Inspection [F-2b(6),(6)a-(6)d]. Operation of the 616 NRDWSF does not involve the placement of dangerous waste in landfills. Therefore, the inspection requirements of WAC 173-303-665 are not applicable to the 616 NRDWSF.

6.2.2.7 Land Treatment Facility Inspection [F-2b(7),(7)a-(7)b]. Operation of the 616 NRDWSF does not involve the land treatment of dangerous waste. Therefore, the inspection requirements of WAC 173-303-655 are not applicable to the 616 NRDWSF.

- Loading pad trench drain plugs are closed and locked.
- Necessary storage building access doors are open.
- Area from loading pad to appropriate storage cell is clear of obstructions.
- If used, the fork truck lift is operational and raised.
- The truck is placed so that container movement occurs over the loading pad.

After a shipment has been accepted for storage (Chapter 2.0, Section 2.8.1), the transporter is requested to unload the truck. Multiple waste containers are placed on pallets for movement into the 616 NRDWSF using pallet jacks or a forklift; the forklift is prohibited from operating in the Class 1A flammable liquid storage cell. Single containers are hand carried or moved on a dolly. The containers are placed in the storage cell as assigned on the associated hazardous waste disposal analysis record (Chapter 3.0, Section 3.2). When the storage of containers is completed, all storage building doors are closed.

6.4.2 Run-Off [F-4b]

Chapter 4.0, Section 4.1.1.7, contains information on run-off and run-on of liquid at the 616 NRDWSF.

6.4.3 Water Supplies [F-4c]

Water is supplied to the 616 NRDWSF from the Columbia River via the Hanford Site potable water system. All hose connections to the potable water line have a one-way check valve installed to prevent back flow. These check valves prevent contamination from entering the water supply lines from within the 616 NRDWSF.

The water supply system (potable and fire sprinkler supply) for the 616 NRDWSF has no backup. A backup is not necessary because of the proximity of the 609-A Fire Station, which can provide a 2 minute response time (Drawing H-13-000014 in Appendix 2A).

6.4.4 Equipment and Power Failure [F-4d)

When waste management activities occur, the powered equipment available is a forklift, fork truck lift, and the ventilation system. If the forklift or fork truck lift fails, the 616 NRDWSF supervisor makes the necessary notifications for repairs. Actions taken in response to a loss of ventilation are detailed in the building emergency plan (Appendix 7A).

As described in Section 6.3.1.2, emergency communication equipment is available to summon emergency assistance in the event of a power loss.

6.4.5 Personnel Protection Equipment [F-4e]

At the 616 NRDWSF, procedures, structures, and equipment are used to prevent undue exposure of personnel to dangerous waste. The 616 NRDWSF includes eyewash stations and safety showers in the combustible storage cell and the packaging and sampling room. Protective clothing and equipment are used by personnel handling dangerous waste. Protective clothing used at the 616 NRDWSF consists of foot, eye, and face protection.

The following protective clothing is worn when handling waste containers:

- Safety glasses
- Chemical-resistant gloves
- Chemical-resistant coveralls
- Approved safety shoes
- Face shield.

The following protective clothing is worn when handling empty new containers:

- Safety glasses or goggles
- Leather gloves
- Approved safety shoes.

6.5 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTES [F-5]

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 [F-5a]

All waste, including ignitable waste, is stored in sealed U.S. Department of Transportation-approved containers. Ignitable waste is stored in the Class 1A or Class 1B flammable liquid storage cells (Chapter 2.0, Figure 2-3). The 1A cell is equipped with National Fire Protection Association 70 Class I/ Division I (NFPA 1989) electrical fixtures, intrinsically safe chemical transfer pumps and receptacles, an explosion relief wall, 'blow out' pressure relief ceiling panels, and grounding cables. Operation of the electric forklift is prohibited in the Class 1A flammable liquid storage cell.

The 616 NRDWSF does not store reactive waste as defined in WAC 173-303-090(7)(a) (vi), (vii), or (viii).

or by the Hanford Facility. Reports such as discharge reports required by 40 CFR 263.30 and WAC 173-303-270 are not applicable.

12.4 TREATMENT, STORAGE, AND/OR DISPOSAL REQUIREMENTS

The reporting and recordkeeping procedures for TSD units are discussed in this section. The TSD reports are described, the operating records and miscellaneous support records contents are described, and plans maintained at MO-720, in the 200 West Area and submitted with this permit application are described.

12.4.1 Reports

This section discusses the reporting requirements of WAC 173-303 and applicable parts of Title 40, Code of Federal Regulations relating to aspects of dangerous waste. The following are included in reporting requirements:

- Waste manifest reports
- Annual reports
- Biennial reports
- Groundwater monitoring reports
- Contingency plan incident reports
- Spills, discharges, and leaks reports
- Closure reports
- Postclosure reports.

Additional details of these reports are provided in the following sections. Copies of these reports are maintained by the 616 NRDWSF or other Hanford Facility organizations as appropriate.

12.4.1.1 Waste Manifest Reports. The waste manifest is the source of two possible reports, the manifest discrepancy report and the unmanifested waste report.

12.4.1.1.1 Manifest Discrepancy. Each nonradioactive dangerous waste transfer to the 616 NRDWSF from generating units must have a waste tracking form for the transfer to be approved (Chapter 2.0, Section 2.8). The onsite waste tracking forms are checked to verify that the forms are properly filled out and that the waste received is identical to the waste described on the manifest. Every effort is made to resolve manifest discrepancies with the generating unit. Manifest discrepancy reports will be submitted to the EPA and Ecology as required by 40 CFR 264.72 and WAC 173-303-370.

12.4.1.1.2 Unmanifested Waste. The unmanifested waste reports will be submitted to the EPA and Ecology as required by 40 CFR 264.76 and WAC 173-303-390. Care is taken to ensure that any waste transfer is recorded as required in the Hanford Facility waste tracking system and that the waste is accompanied by the appropriate EPA Uniform Hazardous Waste Manifest before the transfer is approved (Chapter 2.0, Section 2.8). No waste is accepted at the 616 NRDWSF without a proper manifest.

12.4.1.2 Annual Report. The state of Washington, pursuant to WAC 173-303-390, requires an annual overall report for each facility that holds an active EPA/State identification number. The report is due to Ecology on March 1 of each year. The report contents for the 616 NRDWSF include the following:

- EPA/State identification number
- Name and address of the Hanford Facility
- Calendar year covered by the report
- Sources of the waste stored at the 616 NRDWSF
- Description and quantity of the waste received at the 616 NRDWSF
- TSD methods
- Certification statement signed by an authorized representative.

The report forms and instructions in the "Treatment, Storage, or Disposal Facility Annual Dangerous Waste Report--Forms 4 and 5" are used for this report.

12.4.1.3 Biennial Report. The EPA requires, pursuant to 40 CFR 264.75, that an overall report describing each dangerous waste facility activity be submitted on March 1 of each even-numbered year. Ecology has been extended administrative responsibilities for biennial reporting as required by 40 CFR 264.75. A specific biennial report is not prepared and submitted as all reporting requirements are satisfied by submittal of the annual report to Ecology.

12.4.1.4 Groundwater Monitoring Reports. The 616 NRDWSF is not operated as a dangerous waste surface impoundment, waste pile, land treatment unit, or landfill as defined in WAC 173-303-645-(1)(a). Therefore, no groundwater monitoring or reporting is required for this storage unit.

12.4.1.5 Contingency Plan Incident Notifications. The building emergency director and the 616 NRDWSF line management are responsible for making notifications (Chapter 2.0, Section 2.7.1 and Appendix 7A). Notifications of all emergency situations requiring contingency plan implementation are made as required by 40 CFR 264.56, WAC 173-303-360, and U.S. Department of Energy Order 5000.3A.

In the event of a fire or an explosion, the building emergency director or the 616 NRDWSF line management immediately must notify the Patrol Operations Center by telephone at 911. All emergency incident calls to the emergency number (911) are reported by the Patrol Operations Center to the Hanford Fire Department and the Occurrence Notification Center. In the event of an unplanned release of hazardous or dangerous waste or material, the building emergency director immediately notifies the contractor's environmental protection organization who notifies the DOE-RL and the Occurrence Notification Center. The DOE-RL must be notified by telephone as soon as possible on the day of the incident. The building emergency director or the 616 NRDWSF line management must document the incident on an Occurrence Report to the DOE-RL within 24 hours of categorization of the incident. A copy of the occurrence reports is retained at MO-720, in the 200 West Area as part of the operating record.

If the 616 NRDWSF stops operations in response to a fire, an explosion, or a release that could present a hazard to human health or the environment, the building emergency director notifies DOE-RL, via line management, when the 616 NRDWSF is operational and emergency cleanup is complete.

The DOE-RL is responsible for three types of notifications: an immediate notification, the incident assessment report, and the unit restart notification. Details of these notifications are provided in the following sections.

12.4.1.5.1 Immediate Notification. The Occurrence Notification Center (509-376-2900) immediately will notify affected county emergency management, Ecology, and the individual designated as the on-scene coordinator for the southeastern Washington area of the National Response Center (800-424-8802) if the 616 NRDWSF has had a fire, an explosion, or a release that could threaten human health or the environment.

The report will contain the following information:

- Name and telephone number of reporter
- Name and address of the 616 NRDWSF
- Time and type of incident
- Name and quantity of material(s) involved to the extent known
- Extent of injuries if any

- Possible hazards to human health or the environment outside the 616 NRDWSF

- Actions already taken to mitigate the situation.

12.4.1.5.2 Incident Assessment Report. The DOE-RL will provide a written report to Ecology within 15 days of any incident that requires implementation of the contingency plan. This report will include the following information:

- Name, address, and telephone number of the owner or operator

- Name, address, and telephone number of the TSD unit

- Date, time, and type of incident

- Name and quantity of material(s) involved

- Extent of injuries if any

- Assessment of actual or potential hazards to human health or the environment where this is applicable

- Estimated quantity and disposition of recovered material that resulted from the incident

- Cause of the incident

- Description of corrective action taken to prevent recurrence of the incident.

12.4.1.5.3 Unit Restart Notification. If the 616 NRDWSF stops operations in response to a fire, an explosion, or a release that could present a hazard to human health or the environment, the DOE-RL will notify Ecology and the appropriate local authorities before operations are resumed in the affected area(s) of the storage unit. The notification will indicate that cleanup procedures are complete and that emergency equipment is clean and fit for its intended use.

12.4.1.6 Spills, Discharges, and Leaks Reports. This section discusses the reports prepared as a result of unpermitted spills and discharges to the environment.

In the event of any unplanned release of dangerous waste or hazardous substance, the building emergency director immediately notifies the contractor's environmental protection organization and the Occurrence Notification Center. The Occurrence Notification Center immediately will notify the Hanford Fire Department for appropriate action. The building emergency director documents the incident on an occurrence report. A copy of the occurrence report is retained at MO-720, in the 200 West Area. If an unpermitted spill or discharge exceeds the threshold or reportable quantities, the contractor's environmental protection organization performs the reporting necessary to

comply with the EPA and Ecology regulations. The following information is transmitted to the Occurrence Notification Center:

- Name and telephone number of reporter
- Name and address of the 616 NRDWSF
- Time and type of incident
- Name and quantities of material(s) involved to the extent known
- Extent of injuries if any
- Possible hazards to human health or the environment outside the 616 NRDWSF.

The Occurrence Notification Center immediately notifies Ecology of all reportable spills to the environment or the atmosphere in accordance with the requirements of WAC 173-303-145.

12.4.1.7 **Closure Reports.** Reports regarding the closure of the 616 NRDWSF will be made in accordance with the requirements of 40 CFR 264.115 and .116 and WAC 173-303-610(6) and (9). These reports include notification of beginning of closure and certification of closure.

12.4.1.7.1 **Notification of Closure.** Ecology will be notified in writing at least 45 days before the date on which closure of the 616 NRDWSF is expected to begin.

12.4.1.7.2 **Certification of Closure.** Within 60 days of completion of closure of the 616 NRDWSF, a certification signed by the DOE-RL and an independent, registered professional engineer will be submitted to the regulatory authority. The certification will be sent by registered mail or an equivalent delivery service. The certification will state that the 616 NRDWSF was closed in accordance with the approved closure plan. Documentation supporting the independent registered engineer's certification will be supplied upon request of the regulatory authority.

12.4.1.7.3 Survey Plat. The 616 NRDWSF is not a disposal unit. This determination eliminates the requirement for producing a survey plat.

12.4.1.8 **Postclosure Reports.** Postclosure reports required by 40 CFR 264.119 and .120 and WAC 173-303-610(9), (10), and (11) are not required because the 616 NRDWSF is not a disposal unit.

12.4.2 Recordkeeping Requirements

Records retained by the 616 NRDWSF at MO-720, in the 200 West Area include plans described in other portions of this permit application, operating records, miscellaneous support records, and records of reports made to the regulatory authority. These records are described in the following sections.

12.4.2.1 **Permit Application Plans.** Plans described in other portions of this permit application and retained at MO-720, in the 200 West Area include the following:

- Waste analysis plan
- Contingency plan and amendments
- Training plan
- Closure plan
- Inspection schedule and logs.

Copies of these plans are included in this permit application. These plans are maintained at MO-720, in the 200 West Area during the life of the storage unit. Modifications or amendments required as a result of changing regulatory or operational requirements will be submitted to the regulatory authority and added to the plans maintained at MO-720, in the 200 West Area as required.

12.4.2.2 **Operating Records.** Operating records maintained at MO-720, in the 200 West Area include the following:

- Description and the quantity of each dangerous waste received and the method(s) and date(s) of storage at the 616 NRDWSF in accordance with 40 CFR 264 Appendix I and WAC 173-303-380
- Location of each dangerous waste stored within the storage unit and the quantity at each location
- Waste analyses results
- Contingency plan incident reports
- Inspection records
- Waste minimization certification
- Land disposal restriction records.

12.4.2.2.1 **Waste Description and Quantity.** A description of and the quantity of each dangerous waste handled by the 616 NRDWSF are maintained in the storage unit records. Waste manifest records describing the types and quantities of waste are maintained as part of the operating record.

12.4.2.2.2 **Waste Location.** The location of each nonradioactive dangerous waste container stored within the 616 NRDWSF is documented and maintained. This record provides a cross-reference to associated manifest numbers.

12.4.2.2.3 **Waste Analysis.** Waste analysis records maintained at MO-720, in the 200 West Area are generated only when waste resulting from a spill or leak cannot be identified. All other waste analysis is performed by, and records maintained by, onsite generating units (Chapter 3.0). Records of all the information necessary for treating or disposing of the waste are maintained. Analyses are repeated, as necessary, to ensure accuracy and validity.

12.4.2.2.4 **Contingency Plan Incident Records.** Records documenting the details of any incidents requiring the implementation of the contingency plan (Chapter 7.0), as described in Section 12.4.1.5, are maintained as part of the 616 NRDWSF operating record as required by 40 CFR 264.73 and WAC 173-303-380. In addition to these records, occurrence reports are generated to document incidents. Occurrence reports describe all incidents, including those that are judged too minor to require the implementation of the contingency plan but that are identified as offnormal events, unusual occurrences or emergencies.

12.4.2.2.5 **Inspection Records.** Records of the 616 NRDWSF general inspections are maintained at MO-720, in the 200 West Area for at least 5 years from the inspection date. The records include the following:

- The date and time of inspection
- The inspector's printed name and handwritten signature
- Notations of observations
- The date and nature of any repairs or other remedial actions.

12.4.2.2.6 **Waste Minimization Certification.** Annual certification by the DOE-RL that the 616 NRDWSF is in compliance with the waste minimization requirements is inserted into the operating record as required by 40 CFR 264.73(b)(9).

12.4.2.2.7 **Land Disposal Restriction Records.** Records related to the generation or treatment and disposal of waste subject to land disposal prohibitions are maintained by the Hanford Facility as required by 40 CFR 264.73(b)(10) and (16). Possible records for waste shipped offsite include the following:

- Waste placed in land disposal units under an extension to the effective date of any land disposal restriction granted pursuant to 40 CFR 268.5
- Waste placed in land disposal units under a petition granted pursuant to 40 CFR 268.6
- The applicable notice and certification required by 40 CFR 268.7(a) or 40 CFR 268.7(b)
- The demonstration and certification required by 40 CFR 268.8, if applicable, for waste subject to land disposal prohibitions or restriction.

Additional discussion of land disposal records is provided in the following sections.

12.4.2.2.7.1 Date Extension. The 616 NRDWSF will not apply for an extension to the effective date of a land disposal restriction. The onsite generating unit or the permitted offsite TSD facility will apply for an extension if required. If such an extension is approved by the regulatory authority, the generating unit or permitted offsite TSD facility, as appropriate, will provide a copy of the approval indicating the waste subject to the extension. Copies of these records, as well as the quantities and the date of placement (information the permitted offsite TSD facility is requested to provide to the 616 NRDWSF following disposal) for each shipment of waste subject to the date of the extension, will be maintained at the Hanford Facility.

12.4.2.2.7.2 Petition. The 616 NRDWSF will not petition to allow land disposal of a waste subject to a land disposal restriction under 40 CFR 268, Subpart C. The permitted offsite TSD facility will petition to the regulatory authority for a variance to allow disposal of a restricted or prohibited waste if required. If such a petition is approved by the regulatory authority for waste shipped by the 616 NRDWSF, the permitted TSD facility will be requested to provide information related to the petition so that solid waste management can ensure that the waste shipped complies with the petition. Copies of the records of the petition, as well as the waste quantities and date of placement (information the permitted offsite TSD facility is requested to provide to solid waste management following disposal) for each waste shipment covered by the petition, will be maintained at the Hanford Facility.

12.4.2.2.7.3 Notice. Solid waste management determines if waste is subject to land disposal restrictions (Chapter 3.0, Section 3.2). Based on the information provided by the onsite generating unit, solid waste management prepares the necessary notices and certifications that accompany the associated waste shipments to the permitted offsite TSD facility. The notices and certifications are required for the following cases:

- The waste does not meet the applicable treatment standards
- The waste meets the applicable treatment standards.

Copies of records detailing the waste quantities, and date of placement in the land disposal units (information the permitted offsite TSD facility is requested to provide to solid waste management following disposal), as well as the appropriate notice, certification, and supporting documentation for each shipment of a waste subject to a land disposal restriction or prohibition, are maintained at the Hanford Facility.

Waste Does Not Meet the Applicable Treatment Standards--If solid waste management determines that the waste does not meet the applicable treatment standards or exceeds an applicable prohibition level set forth in 40 CFR 268.32 or Section 3004(d) of RCRA, solid waste management will prepare a notice that is provided to the offsite permitted TSD facility with each shipment of waste. This notice contains the following information:

Table 12-1. Reports and Records. (sheet 1 of 3)

Item	Storage	
	Retention time	Location
Notification of dangerous waste activities	Life of 616 NRDWSF	Hanford Facility
GENERATOR REPORTS AND RECORDS:		
Annual report	Life of 616 NRDWSF	Hanford Facility
Exception report	Life of 616 NRDWSF	Hanford Facility
Additional reports and records as required (e.g., inspection logs)	Life of 616 NRDWSF	Hanford Facility
Test and Waste Analysis Results:		
Waste generated onsite	Life of 616 NRDWSF	Hanford Facility
Waste packaged for offsite shipment	Life of 616 NRDWSF	Hanford Facility
Waste Manifest Reports and Records:		
Manifests	Life of 616 NRDWSF	Hanford Facility
Manifest discrepancy	Not required	NA
Unmanifested waste	Not required	NA
Land Disposal Restriction Records:		
Extension to an effective date	Life of 616 NRDWSF	Hanford Facility
Petition for a variance	Life of 616 NRDWSF	Hanford Facility
Notice and certification of treatment standards	Life of 616 NRDWSF	Hanford Facility
Demonstration and certification for a temporary extension to the effective date	Life of 616 NRDWSF	Hanford Facility
TRANSPORTER REPORTS AND RECORDS:		
None required	NA	NA

Table 12-1. Reports and Records. (sheet 2 of 3)

Item	Storage	
	Retention time	Location
TREATMENT, STORAGE, AND/OR DISPOSAL REPORTS AND RECORDS:		
Permit Application Plans:		
Waste analysis plan	Life of 616 NRDWSF	MO-720,200 West Area
Contingency plan and amendments	Life of 616 NRDWSF	MO-720,200 West Area
Training plan	Life of 616 NRDWSF	MO-720,200 West Area
Closure plan	Life of Hanford Facility	MO-720,200 West Area
Postclosure plan	Not required	NA
Inspection schedule and log	Life of 616 NRDWSF	MO-720,200 West Area
Operating Reports and Records:		
Waste description and quantity	Life of 616 NRDWSF	MO-720,200 West Area
Waste location	Until closure	MO-720,200 West Area
Waste analysis data	Life of 616 NRDWSF	MO-720,200 West Area
Inspection records	Varies from 5 years from inspection date to life of 616 NRDWSF	MO-720,200 West Area
Certification of waste minimization efforts	Life of 616 NRDWSF	MO-720,200 West Area
Land Disposal Restriction Records:		
Extension to an effective date	Life of 616 NRDWSF	Hanford Facility
Petition for a variance	Life of 616 NRDWSF	Hanford Facility
Notice and certification of treatment standards	Life of 616 NRDWSF	Hanford Facility
Demonstration and certification for a temporary extension to the effective date	Life of 616 NRDWSF	Hanford Facility

Table 12-1. Reports and Records. (sheet 3 of 3)

Item	Storage	
	Retention time	Location
Waste Manifest Reports and Records:		
Manifests	Until closure	Hanford Facility
Manifest discrepancy	Not required	NA
Unmanifested waste	Not required	NA
Groundwater Monitoring Reports and Records:		
None required	Not required	NA
Contingency Plan Incident Reports and Records:		
Immediate notification--Occurrence Report	Life of 616 NRDWSF	MO-720,200 West Area
Assessment report	Life of 616 NRDWSF	MO-720,200 West Area
616 NRDWSF restart notification	Life of 616 NRDWSF	MO-720,200 West Area
Spills, Discharges, and Leaks Reports and Records:		
Immediate notification	Life of 616 NRDWSF	MO-720,200 West Area
Closure Reports and Records:		
Certification of closure	Life of 616 NRDWSF	Hanford Facility
Survey plat	Not required	NA
Closure cost estimates (latest)	Life of 616 NRDWSF	Hanford Facility
Postclosure Reports and Records:		
None required	Not required	NA
Miscellaneous Support Reports and Records:		
Annual report	Life of 616 NRDWSF	Hanford Facility
Biennial report	Not required	NA
Training documentation	Life of 616 NRDWSF	MO-720,200 West Area
Liability coverage documentation	Not required	NA

NA = not applicable.

Note: At the time of closure, all 616 NRDWSF environmental records will be transferred to a Hanford Facility central retention area. Hanford Facility means the reports and records are available through the Facility Regulatory File index pursuant to Section 12.0. Until the index is implemented, reports and records will be available at the Facility, but not necessarily at the 616 NRDWSF.

This page intentionally left blank.

Hanford Facility RCRA Permit Modification Notification Forms

for

Part III, Chapter 4

Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility

THIS PAGE INTENTIONALLY
LEFT BLANK

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Part III, Chapter 4 [Section 4.2.3]

Description of Modification:

Page 4-4, Section 4.2.3, lines 21-33:

4.2.3 Primary Treatment Train

The primary treatment train consists of the following ~~units~~ processes:

- Influent Receipt/Surge tank - inlet, surge capacity
- Filtration - for suspended solids removal
- UV/OX - organic destruction
- pH adjustment - waste neutralization
- Hydrogen peroxide decomposition - removal of excess hydrogen peroxide
- Degasification - removal of carbon dioxide
- RO - removal of dissolved solids and radionuclides
- IX - removal of dissolved solids and radionuclides
- Verification - holding tanks during verification.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. G. Svoboda for 3/27/98	4/8/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Part III, Chapter 4 [Section 4.4]

Description of Modification:

Page 4-15, Section 4.4, lines 12-21:

4.4 TANK SYSTEMS [D-2]

This section provides specific information on tank systems and process units. This section also includes~~, including~~ a discussion on the types of waste to be managed in the tanks, tanks design information, integrity assessments, and additional information on the ETF tanks that treat and store dangerous and/or mixed waste. Detailed drawings of the ETF tank systems are provided in Appendix 4B. The ETF dangerous waste tanks are identified in Section 4.4.1.1, and the relative locations of the tanks and process units in the ETF are presented in Figure 4-3. ~~The major process units and tanks include:~~

- ~~Load-In Station~~
- ~~UV/OX~~
- ~~RO~~
- ~~IX/Polishers~~
- ~~Verification tanks~~
- ~~ETF evaporator~~
- ~~Thin film dryer.~~

Modification Class: [2] [3] please check one of the Classes:	Class 1 X	Class [1]1	Class 2	Class 3

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. J. Svoboda for 3/27/98	[signature] 4/5/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Part III, Chapter 4 [Section 4.4.1]

Description of Modification:

Page 4-16, Section 4.4.1, lines 19-24:

The shell thicknesses of the tanks identified in this table represent a nominal thickness of a new tank when placed into operation. The tank capacities identified in this table represent the maximum operating volumes. For certain tanks (as indicated in the table), the maximum operating volume is also the nominal (routine) operating capacity. Nominal tank volumes represent the volume between the low-level and high-level shutoffs in a tank unit.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.2.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions
2. Correction of typographical errors

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. G. Mattsson for 3/27/98	Helen E. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Part III, Chapter 4 [Section 4.4.1.1]

Description of Modification:

Section 4.4.1.1, Page 4-16, lines 46-52 and Page 4-17, lines 1-2:

4.4.1.1 Codes and Standards for Tank System Construction. Specific standards for the manufacture of tanks and process systems installed in the ETF are briefly discussed in the following sections. In addition to these codes and industrial standards, a seismic analysis for each tank and process system is required [WAC 173-303-806(4)(a)(xi)]. The seismic analysis is performed in accordance with UCRL-15910 *Design and Evaluation Guidelines for Department of Energy Facilities Subjected to Natural Phenomena Hazards*, Section 4 (UCRL 1987). The results of the seismic analyses are summarized in the engineering assessment of the ETF tank systems (Mausshardt 1995).

Storage and Treatment Tanks. The following tanks ~~that~~ store and/or treat ~~aqueous~~ dangerous waste at the ETF ~~are maintained at or near atmospheric pressure~~.

Tank name	Tank number
Surge tank	2025E-60A-TK-1
pH adjustment tank	2025E-60C-TK-1
Effluent pH adjustment tank	2025E-60C-TK-2
First RO feed tank	2025E-60F-TK-1
Second RO feed tank	2025E-60F-TK-2
Verification tanks (three)	2025E-60H-TK-1A/1B/1
Secondary waste receiving tanks (two)	2025E-60I-TK-1A/1B
Concentrate tanks (two)	2025E-60J-TK-1A/1B
Sump tanks (two)	2025E-20B-TK-1/2
Distillate flash tank	2025E-60I-TK-2
Load-in tanks	TK-109/117

Modification Class: [2] [3]	Class 1	Class [1]1	Class 2	Class 3
please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:		Reviewed by RL/Program Office:		Reviewed by Ecology:	
K. G. Svoboda for	3/27/98	Allen G. Bilson	4/9/98		
C. G. Mattsson	Date	H. E. Bilson	Date		Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Part III, Chapter 4 [Section 4.4.1.1]

Description of Modification:

Page 4-17, Section 4.4.1.1, lines 21-24:

The relative location of these tanks is presented in Figure ~~4-2~~ 4-3. These tanks are maintained at or near atmospheric pressure. The codes and standards applicable to the design, construction, and testing of the above tanks and ancillary piping systems are as follows:

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification:

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. G. Svoboda for 3/27/98	Julia G. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Part III, Chapter 4 [Section 4.4.4.1]

Description of Modification:

Page 4-24, Section 4.4.4.1, lines 29-34:

Sprinkler System. The sprinkler system within the ETF supplies fire water protection to the process area and the container storage area. This system is connected to a sitewide water supply system and has the capacity to supply ~~at least 20 minutes of fire water~~ sufficient water to suppress a fire at the ETF. However, in the event of failure, the sprinkler system can be hooked up to another water source (e.g., tanker truck).

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. J. Svoboda for 3/27/98	Allen G. Bilson 4/9/98	
C. G. Mattsson Date	A. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Part III, Chapter 4 [Section 4.4.5.2]

Description of Modification:

Section 4.4.5.2, Page 4-29, lines 42-52 and Page 4-30, lines 1-2:

Degasification System. The degasification column is typically supplied aqueous waste feed by the pH adjustment tank feed pump. This pump transfers waste solution through the hydrogen peroxide decomposer, the fine filter, and the degasification column to the first RO feed tank.

The degasification column is designed for operation at a partial vacuum. A pressure sensor in the column detects the column pressure. ~~The vacuum in the column is regulated by the pressure controller that adjusts the opening of the air supply valve.~~ The vacuum in the degasification column is maintained by ~~is exhausted to~~ a blower connected to the vessel offgas system. ~~If extremely low pressure is developed by the column blower, a situation that could compromise column integrity, a pressure relief safety valve is activated.~~ The column is protected from extremely low pressure developed by the column blower by the use of an intake vent that is maintained in the open position during operation. The column liquid level is regulated by a flow control system with a high- and low-level alarm. A plate-type heat exchanger cools the waste solution fed to the degasification column.

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. J. Voogd for 3/27/98	4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Part III, Chapter 4 [Section 4.4.6]

Description of Modification:

Section 4.4.6, Page 4-30, lines 40-51 and Page 4-31, lines 1-12:

4.4.6 Labels or Signs [D-2e]

Each ~~piece of process equipment~~ tank or process unit in the ETF is identified by a nameplate attached in a readily visible location. ~~Equipment procured as a packaged unit also has a nameplate attached.~~ Included on the nameplate are the equipment number; and the equipment title.~~, the manufacturer and the manufacturer's model number, a serial number, and a rating (i.e., capacity, revolutions per minute, torque, range, span, etc.).~~ Those tanks which store or treat dangerous waste at the ETF (Section 4.4.1.1) are identified with a label which reads "PROCESS WATER/WASTE". The labels are legible at a distance of at least fifty feet or as appropriate for legibility within the ETF. Additionally, these tanks bear a legend that identifies the waste in a manner which adequately warns employees, emergency personnel, and the public of the major risk(s) associated with the waste being stored or treated in the tank system(s).

Caution plates are used to show possible hazards and warn that precautions are necessary. Caution signs have a yellow background and black panel with yellow letters and bear the word "CAUTION". Danger signs show immediate danger and signify that special precautions are necessary. These signs are red, black, and white and bear the word "DANGER".

Tanks and vessels containing ~~corrosive waste or~~ corrosive chemicals are posted with black and white signs bearing the word "CORROSIVE". "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT" signs are posted on all exterior doors of the ETF, and on each interior door leading into the process area. Tank ancillary piping is also labeled "PROCESS WATER" or "PROCESS LIQUID" to alert personnel which pipes in the process area contain dangerous and/or mixed waste.

~~All tank systems holding dangerous waste are marked with labels or signs to identify the waste contained in the tank. The labels or signs are legible at a distance of at least fifty feet and bear a legend that identifies the waste in a manner which adequately warns employees, emergency personnel, and the public of the major risk(s) associated with the waste being stored or treated in the tank system(s).~~

Modification Class: [2] [3] please check one of the Classes:	Class 1 X	Class [1]1	Class 2	Class 3

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
   1. Administrative and informational changes.

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:	
K. G. Mattsson for	3/27/98	H. E. Bilson	4/9/98		
C. G. Mattsson	Date	H. E. Bilson	Date		Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1], 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1], if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Part III, Chapter 4 [Section 6.2.2.1]

Description of Modification:

Page 6-3, Section 6.2.2.1, lines 26-42:

6.2.2.1 Container Inspections [F-2d(1)]. Containers are used at the ETF to store solidified secondary waste, such as the powder waste from the thin film dryer ~~before transfer~~ and maintenance and operations waste. When containers are being held in the container storage area, the following inspection schedule is maintained:

- Daily visual inspection of container storage area for leaks, spills, accumulated liquids, and open or improperly sealed containers
- Weekly visual inspection of container labels to ensure labels are not obscured, removed, or otherwise unreadable
- Weekly visual inspection for deterioration of containers, containment systems, or cracks in protective coating or foundations caused by corrosion, mishandling, or other factors.

Following the inspections, an inspection datasheet is signed and dated by the inspector and supervisor.

Modification Class: [2,3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. J. Stobbe for 3/27/98	Arlen G. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Part III, Chapter 4 [Section 6.2.2.2.3]

Description of Modification:

Page 6-4, Section 6.2.2.2.3, lines 10-15:

6.2.2.2.3 Secondary Containment Leak Detectors. The surge tank and verification tank secondary containment systems have sloped floors that drain solution to sumps equipped with leak detectors that alarms in the control room. These alarms are monitored continuously in the control room. ~~These alarms are inspected daily.~~ If an alarm is activated, further investigation is performed to determine if the source is a tank leak or other solution (i.e., precipitation).

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.4.a

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

Changes in the frequency of or procedures for monitoring, reporting, sampling, or maintenance activities by the permittee.

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:	
K. G. Mattsson for C. G. Mattsson	3/27/98 Date	Helen E. Bilson	4/7/98 Date		Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Part III, Chapter 4 [Section 6.2.2.2.4]

Description of Modification:

Page 6-4, Section 6.2.2.2.4, lines 17-20:

6.2.2.2.4 Integrity Assessments. The initial integrity assessment was issued in 1995 (Chapter 4.0). ~~A program has been implemented to perform integrity inspections every 5 years beginning in 2000. Tanks believed to have the greatest potential for corrosion are inspected more frequently.~~ Consistent with the recommendations of the integrity assessment, a periodic integrity assessment program was developed for the ETF tanks and is discussed in detail in section 4.4.2 of Chapter 4.0.

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. G. Svoboda for 3/27/98	4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

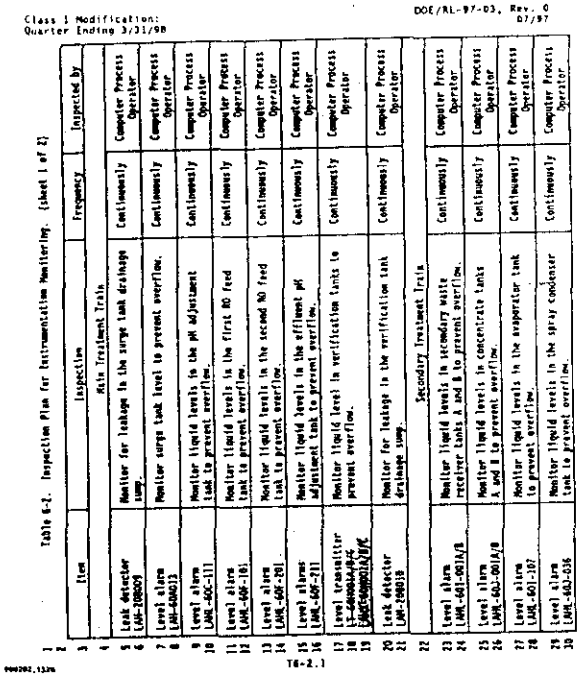
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Part III, Chapter 4 [Section Table T6-2.1 (Sheet 1 of 2)

Description of Modification:

Page T6-2.1, Table 6-2 (Sheet 1of 2), lines 17-19:



Class 1 Modification:
Quarter Ending 3/31/98

DOE/RL-97-03, Rev. 0
07/97

Table 6-2. Inspection Plan for Instrumentation Monitoring. (Sheet 1 of 2)

	Item	Inspection	Frequency	Inspected by
		Main Treatment Train		
5	Leak detector LAH-208009	Monitor for leakage in the surge tank drainage sump.	Continuously	Computer Process Operator
7	Level alarm LAH-600013	Monitor surge tank level to prevent overflow.	Continuously	Computer Process Operator
9	Level alarm LAH_606-111	Monitor liquid levels in the pH adjustment tank to prevent overflow.	Continuously	Computer Process Operator
11	Level alarm LAH_606-101	Monitor liquid levels in the first RO feed tank to prevent overflow.	Continuously	Computer Process Operator
13	Level alarm LAH_606-201	Monitor liquid levels in the second RO feed tank to prevent overflow.	Continuously	Computer Process Operator
15	Level alarms LAH_606-211	Monitor liquid levels in the effluent pH adjustment tank to prevent overflow.	Continuously	Computer Process Operator
17	Level transmitter [illegible]	Monitor liquid level in verification tanks to prevent overflow.	Continuously	Computer Process Operator
20	Leak detector LAH-208018	Monitor for leakage in the verification tank drainage sump.	Continuously	Computer Process Operator
22		Secondary Treatment Train		
23	Level alarm LAH_601-001A/B	Monitor liquid levels in secondary waste receiver tanks A and B to prevent overflow.	Continuously	Computer Process Operator
25	Level alarm LAH_602-001A/B	Monitor liquid levels in concentrate tanks A and B to prevent overflow.	Continuously	Computer Process Operator
27	Level alarm LAH_601-107	Monitor liquid levels in the evaporator tank to prevent overflow.	Continuously	Computer Process Operator
29	Level alarm LAH_602-036	Monitor liquid levels in the spray condenser tank to prevent overflow.	Continuously	Computer Process Operator

T6-2.1

Modification Class: [2] [3] please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions:
1. Administrative and informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:
K. G. Svoboda for 3/27/98	Julie G. Bilson 4/9/98	
C. G. Mattsson Date	H. E. Bilson Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Part III, Chapter 4

Liquid Effluent Retention Facility &200 Area Effluent Treatment Facility

Page Changes

THIS PAGE INTENTIONALLY
LEFT BLANK

CONTENTS

CONTENTS (cont)

CONTENTS (cont)

APPENDICES

FIGURES

FIGURES (cont)

TABLES

4.0 PROCESS INFORMATION [D]

This chapter provides a detailed discussion of the LERF and ETF processes and equipment. The LERF and ETF comprise an aqueous waste treatment system located in the 200 East Area that provides storage and treatment for a variety of aqueous radioactive and/or mixed waste. This aqueous waste includes process condensate from the 242-A Evaporator and other aqueous waste generated from onsite remediation and waste management activities.

The LERF consists of three lined surface impoundments, or basins. Aqueous waste from LERF is pumped to the ETF for treatment in a series of process units, or systems, that remove or destroy essentially all of the dangerous waste and radioactive constituents except tritium. The treated effluent is discharged to a State-Approved Land Disposal Site (SALDS) north of the 200 West Area, under the authority of a Washington State Waste Discharge Permit (Ecology 1995a) and the Final Delisting (40 CFR 261, Appendix IX, Table 2).

4.1 LIQUID EFFLUENT RETENTION FACILITY PROCESS DESCRIPTION

Each of the three LERF basins has an operating capacity of 24.6-million liters. The LERF receives aqueous waste through several inlets including the following:

- A pipeline that connects LERF with the 242-A Evaporator
- A pipeline from the 200 West Area
- A pipeline that connects LERF to the Load-In Station at the ETF
- A series of sample ports located at each basin.

Figure 4-1 presents a general layout of LERF and associated pipelines. Engineering drawings for LERF are referenced in Section 4.5 and provided in Appendix 4A.

Aqueous waste from LERF is pumped to the ETF through one of two double-walled fiberglass transfer pipelines. Effluent from the ETF also can be transferred back to the LERF through one of these transfer pipelines. These pipelines are equipped with leak detection located in the annulus between the inner and outer pipes. In the event that these leak detectors are not in service, the pipelines are visually inspected during transfers for leakage by opening the secondary containment drain lines at the ETF end of the transfer pipelines.

Each basin is equipped with six available sample risers constructed of 6-inch perforated pipe. A seventh sample riser in each basin is dedicated to influent aqueous waste receipt piping (except for aqueous waste received from the 242-A Evaporator), and an eighth riser in each basin contains liquid level instrumentation. Each riser extends along the sides of each basin from the top to the bottom of the basin and allow samples to be collected from any depth. Personnel access to these sample ports is from the perimeter area of the basins.

A catch basin is provided at the northwest corner of each LERF basin for aboveground piping and manifolds for transfer pumps. Aqueous waste from the 242-A Evaporator is transferred through piping that ties into piping at the catch basins. Under routine operations, a submersible pump is used to transfer aqueous waste from a LERF basin to the ETF for processing or for basin-to-basin transfers. This pump is connected to a fixed manifold on one of four available risers.

Each basin consists of a multilayer liner system supported by a concrete anchor wall around the basin perimeter and a soil-bentonite clay underlayment. The multilayer liner system consists of a primary liner in contact with the aqueous waste, a layer of bentonite carpet, a geonet, a geotextile, a gravel layer, and a secondary liner that rests on the bentonite underlayment. Any aqueous waste leakage through the primary liner flows through the geonet to a leachate collection system. The leachate flows to a sump at the northwest corner of each basin, where the leachate is pumped up the sideslope and back into the basin above the primary liner. Each liner is constructed of high-density polyethylene. A floating cover made of very low-density polyethylene is stretched over each basin above the primary liner. These covers serve to keep unwanted material from entering the basins, and to minimize evaporation of the liquid contents.

4.2 EFFLUENT TREATMENT FACILITY PROCESS DESCRIPTION

The ETF is designed as a flexible treatment system that provides treatment for contaminants anticipated in process condensate and other onsite aqueous waste. The design influent flow rate into the ETF is approximately 570 liters per minute with planned outages for activities such as maintenance on the ETF systems. Maintenance outages typically are scheduled between treating a batch of aqueous waste, referred to as treatment campaigns. The effluent flow (or volume) is equivalent to the influent flow (or volume).

The ETF generally receives aqueous waste directly from the LERF. However, aqueous waste also can be transferred from the Load-In Station to the ETF. Aqueous waste is treated and stored in the ETF process area in a series of tank systems, referred to as process units. Within the ETF, waste also is stored in containers. Figure 4-1 provides the relative locations of the process and container storage areas within the ETF.

The process units are grouped in either the primary or the secondary treatment train. The primary treatment train provides for the removal or destruction of contaminants. Typically, the secondary treatment train processes the waste by-products from the primary treatment train by reducing the volume of waste. In the secondary treatment train, contaminants are concentrated and dried to a powder. The liquid fraction is routed to the primary treatment train. Figure 4-2 provides an overview of the layout of the ETF (2025E Building). Figure 4-3 presents the ETF floor plan, the relative locations of the individual process units and associated tanks within the ETF, and the location of the Load-In Station.

The dry powder waste and maintenance and operations waste are containerized and stored in the container storage area or in collection areas. Secondary containment is provided for all containers and tank systems (including ancillary equipment) housed within the ETF. The trenches and floor of the ETF comprise the secondary containment system. The floor includes approximately a 15.2-centimeter rise (berm) along the containing walls of the process and container storage areas. Any spilled or leaked material from within the process area or container storage area is collected into trenches that feed into either sump tank 1 or sump tank 2. From these sump tanks, the spilled or leaked material (i.e., waste) is fed to either the surge tank and processed in the primary treatment train or the secondary waste receiving tanks and processed in the secondary treatment train. All tank systems outside of the ETF are provided with a secondary containment system.

In the following sections, several figures are provided that present general illustrations of the treatment units and the relation to the process. Detailed drawings of the ETF are provided in Appendix 4B.

4.2.1 Load-In Station

The ETF receives aqueous waste from LERF or the Load-In Station. The ETF Load-In Station, located due east of the surge tank and outside of the perimeter fence (Figure 4-3), was designed and constructed to provide the capability to unload, store, and transfer aqueous waste to the ETF or LERF from tanker trucks, and potentially other containers (such as drums). The Load-In Station consists of two load-in tanks, transfer pumps, level instrumentation for tanker trucks, leak detection capabilities for the containment basin and transfer line, and an underground transfer line that connects to either the ETF or LERF.

Currently, tanker trucks are used to unload aqueous waste at the Load-In Station. A tanker truck is positioned on a truck pad, a 'load-in' transfer line is connected to the truck, and the tanker contents are pumped into one of the Load-In Station tanks or directly to the LERF. Any leaks at the Load-In Station drain to the sump. A leak detector in the sump alarms locally and in the ETF control room. Alternatively, leaks can be visually detected.

4.2.2 Effluent Treatment Facility Operating Configuration

Because the operating configuration of the ETF can be adjusted or modified, most aqueous waste streams can be effectively treated to below Delisting and Discharge Permit limits. The operating configuration of the ETF depends on the unique chemistry of an aqueous waste stream(s). Before an aqueous waste stream is accepted for treatment, the waste is characterized and evaluated. Information from the characterization is used to adjust the treatment process or change the configuration of the ETF process units, as necessary, to optimize the treatment process for a particular aqueous waste stream.

Typically, an aqueous waste is processed first in the primary treatment train, where the ETF is configured to process an aqueous waste through the UV/OX unit first, followed by the RO unit. However, under an alternate configuration, an aqueous waste could be processed in the RO unit first. For example, high concentrations of nitrates in an aqueous waste might interfere with the performance of the UV/OX. In this case, the ETF could be configured to process the waste in the RO unit before the UV/OX unit.

The flexibility of the ETF also allows for some aqueous waste to be processed in the secondary treatment train first. For example, for small volume aqueous waste with high concentrations of some anions and metals, the approach could be to first process the waste stream in the secondary treatment train. This approach would prevent premature fouling or scaling of the RO unit. The liquid portion (i.e., untreated overheads from the ETF evaporator and thin film dryer) would be sent to the primary treatment train.

Figures 4-4 and 4-5 provide example process flow diagrams for two different operating configurations.

4.2.3 Primary Treatment Train

The primary treatment train consists of the following processes:

- Influent Receipt/Surge tank - inlet, surge capacity
- Filtration - for suspended solids removal
- UV/OX - organic destruction
- pH adjustment - waste neutralization
- Hydrogen peroxide decomposition - removal of excess hydrogen peroxide
- Degasification - removal of carbon dioxide
- RO - removal of dissolved solids and radionuclides
- IX - removal of dissolved solids and radionuclides
- Verification - holding tanks during verification.

Each of the primary treatment train process units and ancillary systems provides treatment for removal or destruction of various constituents. The primary treatment train units are operated as needed in different configurations, as determined by the characteristics of an aqueous waste stream, to protect ETF equipment and to meet discharge requirements.

Influent Receipt/Surge Tank. Depending on the configuration of the ETF, the surge tank is one inlet used to feed an aqueous waste into the ETF for treatment. In Configuration 1 (Figure 4-4), the surge tank is the first component downstream of the LERF. The surge tank provides a storage/surge volume for chemical pretreatment and controls feed flow rates from the LERF to the ETF. However, in Configuration 2 (Figure 4-5), aqueous waste from LERF is fed directly into the treatment units. In this configuration, the surge tank receives aqueous waste that has been processed in the RO units and provides the feed stream to the remaining downstream process units. In yet another configuration, some small volume aqueous waste could be received into the secondary treatment train first for processing. In this case, the aqueous waste would be received directly into the secondary waste receiving tanks.

Finally, the surge tank also receives waste extracted from various systems within the primary and secondary treatment train while in operation.

The surge tank is located outside the ETF on the south side. In the surge tank (Figure 4-6), the pH of an aqueous waste is adjusted using the metered addition of sulfuric acid and sodium hydroxide, as necessary, to prepare the waste for treatment in downstream processes. In addition, hydrogen peroxide or biocides could be added to control biological growth in the surge tank. A pump recirculates the contents in the surge tank, mixing the chemical reagents with the waste to a uniform pH.

Filtration. Two primary filter systems remove suspended particles in an aqueous waste: a rough filter removes the larger particulates, while a fine filter removes the smaller particulates. The location of these filters depends on the configuration of the primary treatment train. However, the filters normally are located upstream of the RO units.

The solids accumulating on these filter elements are backwashed to the secondary waste receiving tanks with pulses of compressed air and water, forcing water back through the filter. The backwash operation is initiated either automatically by a rise in differential pressure across the filter or manually by an operator. The filters are cleaned chemically when the backwashing process does not facilitate acceptable filter performance.

Auxiliary fine and rough filters (e.g., disposable filters) have been installed to provide additional filtration capabilities. Depending on the configuration of the ETF, the auxiliary filters are operated either in series with the primary filters to provide additional filtration or in parallel, instead of the primary fine and rough filters, to allow cleaning of the primary fine and rough filters while the primary treatment train is in operation.

Ultraviolet Light/Oxidation. Organic compounds contained in an aqueous waste stream are destroyed in the UV/OX system (Figure 4-7). Hydrogen peroxide is mixed with the waste. The UV/OX system uses the photochemical reaction of UV light on hydrogen peroxide to form hydroxyl radicals and other reactive species oxidize the organic compounds. The final products of the complete reaction are carbon dioxide, water, and inorganic ions.

Organic destruction is accomplished in two UV/OX units operating in parallel. During the UV/OX process, the aqueous waste passes through reaction chambers where hydrogen peroxide is added. While in the UV/OX system, the temperature of an aqueous waste is monitored. Should the temperature of the waste exceed the upper limits for the UV/OX or RO systems, heat exchangers are used to reduce the temperature of the waste.

pH Adjustment. The pH of a waste stream is monitored and controlled at different points throughout the treatment process. Within the primary treatment train, the pH of a waste can be adjusted with sulfuric acid or sodium hydroxide to optimize operation of downstream treatment processes or adjusted before final discharge. For example, the pH of an aqueous waste would be adjusted in the pH adjustment tank after the UV/OX process and before

the RO process. In this example, pH is adjusted to cause certain chemical species such as ammonia to form ammonium sulfate, thereby increasing the rejection rate of the RO.

Hydrogen Peroxide Decomposition. Typically, hydrogen peroxide added into the UV/OX system is not consumed completely by the system. Because hydrogen peroxide is a strong oxidizer, the residual hydrogen peroxide from the UV/OX system is removed to protect the downstream equipment. The hydrogen peroxide decomposer uses activated carbon to break down the hydrogen peroxide that is not consumed completely in the process of organic destruction. The aqueous waste is sent through a column of fluidized activated carbon that breaks down the hydrogen peroxide into water and oxygen. The gas generated by the decomposition of the hydrogen peroxide is vented to the vessel offgas system.

Degasification. The degasification column is used to purge dissolved carbon dioxide from the aqueous waste to reduce the carbonate loading to downstream dissolved solids removal processes within the ETF primary treatment train. The purged carbon dioxide is vented to the vessel offgas system.

Reverse Osmosis. The RO system (Figure 4-8) uses pressure to force clean water molecules through semi-permeable membranes while keeping the larger molecule contaminants, such as dissolved solids, radionuclides, and large molecular weight organic materials, in the membrane. The RO process uses a staged configuration to maximize water recovery. The process produces two separate streams, including a clean 'permeate' and a concentrate (or retentate), which are concentrated as much as possible to minimize the amount of secondary waste produced.

The RO process is divided into first and second stages. Aqueous waste is fed to the first RO stage from the RO feed tank. The secondary waste receiving tanks of the secondary treatment train receive the retentate removed from the first RO stage, while the second RO stage receives the permeate (i.e., 'treated' aqueous waste from the first RO stage). In the second RO stage, the retentate is sent to the first stage RO feed tank while the permeate is sent to the IX system or to the surge tank, depending on the configuration of the ETF.

Two support systems facilitate this process. An anti-scale system injects scale inhibitors as needed into the feed waste to prevent scale from forming on the membrane surface. A clean-in-place system using cleaning agents, such as descalants and surfactants, cleans the membrane pores of surface and subsurface deposits that have fouled the membranes.

Ion Exchange. Because the RO process removes most of the dissolved solids in an aqueous waste, the IX process (Figure 4-9) act as a polishing unit. The IX system consist of three columns containing beds of cation and/or anion resins. This system is designed to allow for regeneration of resins and maintenance of one column while the other two are in operation. Though the two columns generally are operated in series, the two columns also can be operated in parallel or individually.

Typically, the two columns in operation are arranged in a primary/secondary (lead/lag) configuration, and the third (regenerated) column is maintained in standby. When dissolved solids breakthrough the first IX column and are detected by a conductivity sensor, this column is removed from service for regeneration, and the second column replaces the first column and the third column is placed into service. The column normally is regenerated using sulfuric acid and sodium hydroxide. The resulting regeneration waste is collected in the secondary waste receiving tanks.

Should regeneration of the IX resins become inefficient, spent resins are transferred into a disposal container. The container is designed to provide dewatering with remote monitoring of the resin and water levels within the container. Displaced air from the vessels is exhausted through an entrainment separator (to remove water drops) and a high-efficiency particulate air filter and into the vessel offgas system. Free water is removed from the container and returned to the surge tank. Dewatered resins are transferred to a final storage/disposal point.

Verification. The three verification tanks (Figure 4-10) are used to hold the treated effluent while a determination is made that the effluent meets discharge limits. Should a treated effluent not meet Discharge Permit or Final Delisting requirements, the effluent can be returned to the primary treatment train for additional treatment or to the LERF.

The three verification tanks alternate between three operating modes: receiving treated effluent, holding treated effluent during laboratory analysis and verification, or discharging verified effluent. Treated effluent may also be returned to the ETF to provide 'clean' service water for operational and maintenance functions, e.g., for boiler water and for backwashing the filters. This recycling keeps the quantity of fresh water used to a minimum.

4.2.4 Secondary Treatment Train

The secondary treatment system typically receives and processes the following by-products generated from the primary treatment train: concentrate from the first RO stage, filter backwash, regeneration waste from the ion exchange system, and spillage or overflow received into the process sumps. Depending on the operating configuration, however, some aqueous waste could be processed in the secondary treatment train before the primary treatment train (refer to Figures 4-4 and 4-5 for example operating configurations).

The secondary treatment train provides the following processes:

- Secondary waste receiving - tank receiving
- Evaporation - concentrates secondary waste streams
- Concentrate staging - concentrate receipt and pH adjustment in concentrate tanks

- Thin film drying - dewatering of secondary waste streams

- Container handling - packaging of dewatered secondary waste.

Secondary Waste Receiving. Waste to be processed in the secondary treatment train is received into two secondary waste receiving tanks, where the pH can be adjusted with sulfuric acid or sodium hydroxide for optimum evaporator performance.

Evaporation. The ETF evaporator is fed alternately by the two secondary waste receiving tanks. One tank serves as a waste receiver while the other tank is operated as the feed tank. The ETF evaporator vessel (also referred to as the vapor body) is the principal component of the evaporation process (Figure 4-11).

Feed from the secondary waste receiving tanks is pumped through a heater to the recirculation loop of the ETF evaporator. In this loop, concentrated waste is recirculated from the ETF evaporator, to a heater, and back into the evaporator where vaporization occurs. As water leaves the evaporator system in the vapor phase, the concentration of the waste in the evaporator increases. When the concentration of the waste reaches the appropriate density, a portion of the concentrate is pumped to one of the concentrate tanks.

The vapor that is released from the ETF evaporator is routed to the entrainment separator, where water droplets and/or particulates are separated from the vapor. The 'cleaned' vapor is routed to the vapor compressor and heater. The steam from the vapor compressor/heater is used to heat the recirculating concentrate in the ETF evaporator. From the vapor compressor/heater, the steam is condensed and fed to the distillate flash tank, where the saturated condensate received from the heater drops to atmospheric pressure and cools to the normal boiling point through partial flashing (rapid vaporization caused by a pressure reduction). The resulting distillate is routed to the surge tank. Noncondensible vapors, such as air, are exhausted by a vacuum blower to the vessel offgas system.

Concentrate Staging. The concentrate tanks make up the head end of the thin film drying process. From the ETF evaporator, concentrate is pumped into two concentrate tanks and pH adjusted. The concentrate tanks function alternately between concentrate receiver and feed tank for the thin film dryer.

Thin Film Drying. From the concentrate tanks, feed is pumped through a preheater to the thin film dryer (Figure 4-12) that is heated by steam. As the concentrated waste flows down the length of the dryer, the waste is dried. The dried film, or powder, is scraped off the dryer cylinder by blades attached to a rotating shaft. The powder is funnelled through a cone-shaped powder hopper at the bottom of the dryer and into the Container Handling System.

Overhead vapor released by the drying of the concentrate is condensed in the distillate condenser. Excess heat is removed from the distillate by a

water-cooled heat exchanger. Part of the distillate is circulated back to the condenser spray nozzles. The remaining distillate is pumped to the surge tank. Any noncondensible vapors and particulates from the spray condenser are exhausted to the vessel offgas system.

Container Handling. Before an empty container is moved into the Container Handling System (Figure 4-13), the lids are loosely placed on the containers and the container is placed on a conveyor. After the lid is removed, the containers are moved into the container filling area after passing through an air lock. The empty container is located under the thin film dryer, and raised into position. The container is sealed to the thin film dryer and a rotary valve begins the transfer of powder to the empty container. Air displaced from the container is vented to the entrainment separator attached to the ETF evaporator that exhausts to the vessel offgas system.

The container is filled to a predetermined level, recapped, and moved along the conveyor to the smear station airlock. At the smear station airlock, the container is moved onto the conveyor by remote control. The airlock is opened and the smear sample (surface wipe) is taken and the radionuclide contamination level counted. A 'C' ring is installed to secure the container lid. If the container has contaminated material on the outside, the container is moved to the washdown station and washed. The container wash water drains to sump tank 1. The washed container is air-dried and retested. Filled containers that pass the smear test are labeled, placed on pallets, and moved by forklift to the filled container storage area. Section 4.3 provides a more detailed discussion of container handling.

4.2.5 Other Effluent Treatment Facility Systems

The ETF is provided with support systems that facilitate treatment in the primary and secondary treatment trains and that provide for worker safety and environmental protection. An overview of the following systems is provided:

- Monitor and control system
- Vessel offgas system
- Sump collection system
- Chemical reagent feed system
- Utilities.

4.2.5.1 Monitor and Control System. The operation of the ETF is monitored and controlled by a centralized computer system (i.e., monitor and control system or MCS). The MCS continuously monitors data from various field indicators, such as pH, flow, tank level, temperature, pressure, conductivity, alarm status, and valve switch positions. Data gathered by the MCS enable operations and engineering personnel to document and adjust the operation of the ETF.

4.2.5.2 Vessel Offgas System. Ventilation for various tanks and vessels is provided through the vessel offgas system. The system includes a moisture separator, duct heater, pre-filter, high-efficiency particulate air filters,

carbon adsorber, exhaust fans, and ductwork. Gasses ventilated from the tanks and vessels enter the exhaust system through the connected ductwork. The vessel offgas system draws vapors and gasses off the following tanks and treatment systems:

- Surge tank
- ETF evaporator
- pH adjustment tank
- Concentrate tanks
- Degasification system
- First and second RO stages
- Dry powder hopper
- Effluent pH adjustment tank
- Drum capping station
- Secondary waste receiving tanks
- Resin dewatering system
- Distillate condenser (off the thin film dryer)
- Sump tanks 1 and 2.

The vessel offgas system maintains a negative pressure with respect to the atmosphere, which produces a slight vacuum within tanks, vessels, and ancillary equipment for the containment of gas vapor. This system also provides for the collection, monitoring, and treatment of confined airborne in-vessel contaminants to preclude over-pressurization. The high-efficiency particulate air filters remove particulates and condensate from the air stream before these are discharged to the radiologically controlled heating, ventilation, and air conditioning system.

4.2.5.3 Sump Collection System. Sump tanks 1 and 2 compose the sump collection system that provides containment of waste streams and liquid overflow associated with the ETF processes. The process area floor is sloped to two separate trenches that each drain to a sump tank located under the floor of the ETF. One trench runs the length of the primary treatment train and drains to sump tank 2 located underneath the verification tank pump floor. The second trench collects spillage primarily from the secondary treatment train and flows to sump tank 1 located near the ETF evaporator. Sump tanks 1 and 2 are located below floor level (Figure 4-14). An eductor in these tanks prevents sludge from accumulating.

4.2.5.4 Chemical Injection Feed System. At several points within the primary and secondary treatment trains, sulfuric acid and sodium hydroxide (or dilute solutions of these reagents) are metered into specific process units to adjust the pH. For example, a dilute solution of 4 percent sulfuric acid and 4 percent sodium hydroxide could be added to the secondary waste receiving tanks to optimize the evaporation process.

4.2.5.5 Verification Tank Recycle System. To reduce the amount of water added to the process, verification tank water (i.e., verified effluent) is recycled throughout the ETF process. The following tanks and ancillary equipment use verification tank water:

- 4% H_2SO_4 solution tank and ancillary equipment

- 4% NaOH solution tank and ancillary equipment
- Clean-in-place tank and ancillary equipment
- ETF evaporator boiler and ancillary equipment
- Thin film dryer boiler and ancillary equipment.

4.2.5.6 Utilities. The ETF maintains the following utility supply systems required for the operation of the ETF:

- Cooling water system - removes heat from process water via heat exchangers and a cooling tower

- Compressed air system - provides air to process equipment and instrumentation

- Seal water system - provides cool, clean, pressurized water to process equipment for pump seal cooling and pump seal lubrication, and provides protection against failure and fluid leakage

- Demineralized water system - removes solids from raw water system to produce high-quality, low ion-content, water for steam boilers, and for the hydrogen peroxide feed system.

- Heating, ventilation, and air conditioning system - provides continuous heating, cooling, and air humidity control throughout the ETF.

The following utilities support ETF activities:

- Electrical power
- Sanitary water
- Communication systems
- Raw water.

4.3 CONTAINERS [D-1]

This section provides specific information on container storage operations at the ETF, including descriptions of containers, labeling, and secondary containment structures.

A list of dangerous and/or mixed waste stored in containers at the ETF is presented in Chapter 1.0. The types of dangerous and/or mixed waste managed in the container storage areas of the ETF may include the following secondary waste generated by the ETF processes:

- Dry powder waste generated from the treatment process

- Miscellaneous waste generated by operations and maintenance activities.

The secondary treatment train processes the waste by-products from the primary treatment train, which are concentrated and dried into a powder.

Containers are filled with dry powder waste from the thin film dryer via a remotely controlled system. Miscellaneous waste generated from maintenance and operations activities also are stored at the ETF. The waste could include process waste, such as used filter elements; spent RO membranes; damaged equipment; and decontamination and maintenance waste, such as contaminated rags, gloves, and other personal protective equipment. Liquids generally are packaged with absorbents at a 2 to 1 ratio.

Several container collection areas could be located within the ETF process and container handling areas. These collection areas are used only to accumulate waste in containers. Once a container is filled, the container is transferred either to the container storage area (Figure 4-3) or to another TSD unit. The container storage area, a 22.9 x 8.5-meter room, is located adjacent to the ETF process area. The containers within the container storage area are clearly labelled, and access to these containers is limited by barriers and by administrative controls. The ETF floor provides secondary containment, and the ETF roof and walls protects all containers from exposure to the elements.

4.3.1 Description of Containers [D-1a]

The containers used to collect and store dry powder waste are 208-liter steel containers. Most of the maintenance and operation waste is stored in 208-liter steel containers; however, in a few cases, the size of the container could vary to accommodate the size of a particular waste. For example, some process waste, such as spent filters, might not fit into a 208-liter container. In the case of spent resin from the IX columns, the resin is dewatered and could be packaged in a special disposal container. In these few cases, specially sized containers could be required. In all cases, however, only approved container are used and are compatible with the associated waste.

Current operating practices indicate the use of new 208-liter containers that either have a polyethylene liner or a protective coating. Any reused or reconditioned container is inspected for container integrity before use. Overpack containers are available for use with damaged containers. Overpack containers typically are unlined steel or polyethylene. Per Chapter 1.0, a maximum of 147,630 liters of dangerous and/or mixed waste could be stored in containers in the ETF.

4.3.2 Container Management Practices [D-1b]

Before use, each container is checked for signs of damage such as dents, distortion, corrosion, or scratched coating. For dry powder loading, empty containers on pallets are raised by a forklift and manually placed on the conveyor that transports the containers to the automatic filling station in the container handling room (Figure 4-13). The container lids are removed and replaced automatically during the filling sequence. After filling, containers exit the container handling room via the filled drum conveyor. Locking rings are installed, the container label is affixed, and the container is moved by dolly or forklift to the container storage area.

Containers used for maintenance and operations secondary waste are labeled before being placed in the container storage area or in a collection area. Lids are secured on these containers when not being filled. When the containers in a collection area are full, the containers are transferred by dolly or forklift to the container storage area or to an appropriate TSD unit.

The filled containers in the container storage area are inventoried, checked for proper labeling, and placed on pallets. Each pallet is moved by forklifts. Within a container storage area, palletized containers are stacked no more then three pallets high and in rows no more than two containers wide. Rows are separated by unobstructed aisles with a minimum of 76-centimeter aisle space.

4.3.3 Container Labeling [D-1c]

Labels are affixed on containers used to store dry powder when the containers leave the container handling room. Labels are affixed on maintenance and operations waste containers before being placed in a container storage area. Every container is labeled with the date that the container was filled. Appropriate major risk labels, such as "corrosive", "toxic" or "F-listed", also are added. Each container also has a label with an identification number for tracking purposes.

4.3.4 Containment Requirements for Storing Containers [D-1d]

Secondary containment is provided in the container storage area and the collection areas, though the containers are not anticipated to contain appreciable liquids. The secondary containment provided for tank systems also serves the container storage area and the collection areas. This section describes the design and operation of the secondary containment structure for the container storage area and collection areas. Detailed drawings of the ETF secondary containment systems are presented in Appendix 4B.

4.3.4.1 Secondary Containment System Design [D-1d(1)(a)]. For the container storage area, and the collection areas within the ETF, secondary containment is provided by the reinforced concrete floor and a 15.2-centimeter rise (berm) along the walls of the container storage areas of the ETF. The engineering assessment required for tanks (Mausshardt 1995) also describes the design and construction of the secondary containment provided for the ETF container storage areas. All systems were designed to national codes and standards (e.g., American Society for Testing Materials, American Concrete Institute standards).

The floor in composed of cast-in-place and pre-formed concrete slabs and has a minimum thickness of 15.2 centimeters. All slab joints and floor and wall joints have waterstops installed at the mid-depth of the slab. In addition, filler was applied to each joint. The floor and berms are coated with a chemically resistant, high-solids epoxy coating system consisting of primer, filler, and top coating. This coating material is compatible with the waste stored in containers and is an integral part of the secondary containment system for containers.

The floor is sloped to drain any solution in the container storage area to floor drains along the west wall. Each floor drain consists of a grating over an 20.3-centimeter drain port connected to a 4-inch stainless steel transfer pipe. The pipe passes under this wall and connects to a trench running along the east wall of the adjacent process area. This trench drains solution to sump tank 1.

The container storage area is separated from the process area by a common wall and a door for access to the two areas (Figure 4-2). These two areas also share a common floor and trenches that, with the 15.2-centimeter rise of the containing walls, form the secondary containment system for the process area and the container storage area.

4.3.4.1.1 Structural Integrity of Base [D-1d(1)(b)]. Engineering calculations were performed showing the floor of the container storage area is capable of supporting the weight of containers. These calculations were reviewed and certified by a professional engineer (Mausshardt 1995). The concrete was inspected for damage during construction. Cracks were identified and repaired to the satisfaction of the professional engineer. Documentation of these certifications is included in the engineering assessment (Mausshardt 1995) and a copy of the certification is provided in Appendix 4C.

4.3.4.1.2 Containment System Capacity [D-1d(1)(c)]. The container storage area is primarily used to store dry powder and maintenance and operation waste. Where appropriate, absorbents are added to fix any trace liquids present. Large volumes of liquid are not stored in the container storage area. The maximum volume of waste that can be stored in containers in the container storage area is 147,630 liters.

Both the process area and the container storage area are considered in the containment system capacity. The volume available for secondary containment in the process area is approximately 68,000 liters, as discussed in the engineering assessment (Mausshardt 1995). Using the dimensions of the container storage area (22.9 by 8.5 by 0.15 meters), and assuming that 50 percent of the floor area is occupied by containers, the volume of the container storage area is 14,900 liters. The combined volume of both the container storage and process areas available for secondary containment, therefore, is 82,900 liters. This volume is greater than 10 percent of the maximum total volume of containers allowed for storage in the ETF, as discussed previously.

4.3.4.1.3 Control of Run-on [D-1d(1)(d)]. The container storage area and collection areas are located within the ETF, which serves to prevent run-on of precipitation.

4.3.4.2 Removal of Liquids from Containment Systems [D-1d(2)]. The container storage area is equipped with drains that route solution to a trench in the process area which drains to sump tank 1. The sump tanks are equipped with alarms that notify operating personnel that a leak is occurring. The sump tanks also are equipped with pumps to transfer waste to the surge tank or the secondary treatment train.

4.3.4.3 Prevention of Ignitible, Reactive, and Incompatible Wastes in Containers [D-1f]. Individual waste types, i.e., ignitable, corrosive, and reactive, are stored in separate containers. A waste that could be incompatible with other wastes is separated and protected from the incompatible waste. For example, acidic and caustic wastes are stored in separate containers. Free liquids are absorbed in containers that hold incompatible waste at a 2 to 1 ratio. Additionally, ETF-specific packaging requirements for these types of waste provide extra containment with each individual container. For example, each item of acidic waste is individually bagged and sealed within a lined container.

4.4 TANK SYSTEMS [D-2]

This section provides specific information on tank systems and process units. This section also includes, a discussion on the types of waste to be managed in the tanks, tanks design information, integrity assessments, and additional information on the ETF tanks that treat and store dangerous and/or mixed waste. Detailed drawings of the ETF tank systems are provided in Appendix 4B. The ETF dangerous waste tanks are identified in Section 4.4.1.1, and the relative locations of the tanks and process units in the ETF are presented in Figure 4-3.

4.4.1 Design Requirements [D-2a(1)]

The following sections provide an overview of the design specifications for the tanks within the ETF. A separate discussion on the design of the process units also is provided. In accordance with the new tank system requirements of WAC 173-303-640(3), the following tank components and specifications were assessed:

- Dimensions, capacities, wall thicknesses, and pipe connections
- Materials of construction and linings and compatibility of materials with the waste being processed
- Materials of construction of foundations and structural supports
- Review of design codes and standards used in construction
- Review of structural design calculations, including seismic design basis
- Waste characteristics and the affects of waste on corrosion.

This assessment was documented in the *Final RCRA Information Needs Report* (Mausshardt 1995), the engineering assessment performed for the ETF tank systems by an independent professional engineer. A similar assessment of design requirements was performed for the load-in tanks and is documented in *200 Area Effluent BAT/AKART Implementation, ETF Truck Load-In Facility, Project W-291H Integrity Assessment Report* (KEH 1994).

The specifications for the preparation, design, and construction of the tanks systems at the ETF are documented in the *Design Construction Specification, Project C-018H, 242-A Evaporator/PUREX Plant Process Condensate Treatment Facility* (WHC 1992a). The preparation, design, and construction of the load-in tanks are provided in the construction specifications in *Project W-291, 200 Area Effluent BAT/AKART Implementation ETF Truck Load-in Facility* (KEH 1994).

Most of the tanks in the ETF are constructed of stainless steel. According to the design of the ETF, it was determined that stainless steel would provide adequate corrosion protection for these tanks. Exceptions include the verification tanks, which are constructed of carbon steel with an epoxy coating. The ETF evaporator/vapor body (and the internal surfaces of the thin film dryer) are constructed of a corrosion resistent alloy, known as alloy 625, to address the specific corrosion concerns in the secondary treatment train. Finally, the hydrogen peroxide decomposer vessels are constructed of carbon steel and coated with a vinyl ester lining.

The shell thicknesses of the tanks identified in this table represent a nominal thickness of a new tank when placed into operation. The tank capacities identified in this table represent the maximum operating volumes. For certain tanks (as indicated in the table), the maximum operating volume is also the nominal (routine) operating capacity. Nominal tank volumes represent the volume between the low-level and high-level shutoffs in a tank unit.

Dangerous and/or mixed waste that can be treated or stored in the ETF tanks is presented in Chapter 1.0. Aqueous waste, in addition to process condensate, that is treated and stored at the LERF and ETF includes, but is not limited to, the following: contaminated groundwater from pump-and-treat remediation activities such as groundwater from the 200-UP-1 Operable Unit; water from deactivation activities such as water from the spent fuel storage basins at deactivated reactors (e.g., N Reactor); laboratory aqueous waste from unused samples and sample analyses; and leachate from landfills, such as the Environmental Restoration Disposal Facility.

Before accepting a new aqueous waste stream at the LERF or ETF, an evaluation of the waste characteristics is performed to determine the treatability of the aqueous waste, including the potential to corrode the ETF tanks. This acceptance evaluation is discussed in the waste analysis plan (Appendix 3A). If the evaluation indicates a new aqueous waste stream would significantly increase corrosion rates, processing actions are initiated to reduce corrosion. These actions might include blending the aqueous waste with other aqueous waste or adjusting the pH of the aqueous waste to reduce corrosion.

4.4.1.1 Codes and Standards for Tank System Construction. Specific standards for the manufacture of tanks and process systems installed in the ETF are briefly discussed in the following sections. In addition to these codes and industrial standards, a seismic analysis for each tank and process system is required [WAC 173-303-806(4)(a)(xi)]. The seismic analysis is performed in accordance with UCRL-15910 *Design and Evaluation Guidelines for Department of Energy Facilities Subjected to Natural Phenomena Hazards*, Section 4

(UCRL 1987). The results of the seismic analyses are summarized in the engineering assessment of the ETF tank systems (Mausshardt 1995).

Storage and Treatment Tanks. The following tanks store and/or treat dangerous waste at the ETF.

Tank name	Tank number
Surge tank	2025E-60A-TK-1
pH adjustment tank	2025E-60C-TK-1
Effluent pH adjustment tank	2025E-60C-TK-2
First RO feed tank	2025E-60F-TK-1
Second RO feed tank	2025E-60F-TK-2
Verification tanks (three)	2025E-60H-TK-1A/1B/1
Secondary waste receiving tanks (two)	2025E-60I-TK-1A/1B
Concentrate tanks (two)	2025E-60J-TK-1A/1B
Sump tanks (two)	2025E-20B-TK-1/2
Distillate flash tank	2025E-60I-TK-2
Load-in tanks	TK-109/117

The relative location of these tanks is presented in Figure 4-3. These tanks are maintained at or near atmospheric pressure. The codes and standards applicable to the design, construction, and testing of the above tanks and ancillary piping systems are as follows:

ASME - B31.3	Chemical Plant and Petroleum Refinery Piping (ASME 1990)
ASME Sect. VIII, Division I	Pressure Vessels (ASME 1992a)
AWS - D1.1	Structural Welding Code - Steel (AWS 1992)
ANSI - B16.5	Pipe Flanges and Flanged Fittings (ANSI 1992)
ASME Sect. IX	Welding and Brazing Qualifications (ASME 1992b)
API 620	Design and Construction of Large Welded Low Pressure Storage Tanks (API 1990)
AWWA - D100	Welded Steel Tanks for Water Storage (AWWA 1989)
AWWA - D103	Factory-Coated Bolted Steel Tanks for Water Storage (AWWA 1987)
AWWA - D120	Thermosetting Fiberglass-Reinforced Plastic Tanks (AWWA 1984).

The application of these standards to the construction of ETF tanks and independent verification of completed systems ensured that the tank and tank supports had sufficient structural strength and that seams and connections were adequate to ensure tank integrity. In addition, each tank met strict quality assurance requirements. Each tank constructed offsite was tested for integrity and leak tightness before shipment to the Hanford Facility. Following installation, the systems were inspected for damage to ensure against leakage and to verify proper operation. If a tank was damaged during shipment or installation, leak tightness testing was repeated onsite.

4.4.1.2 Design Information for Tanks Located Outside of Effluent Treatment Facility. The load-in tanks, surge tank, and verification tanks are located outside the ETF. These tanks are located within concrete structures that provide secondary containment.

Load-In Tanks and Ancillary Equipment. The load-in tanks are constructed of stainless steel, are heated, and have a nominal capacity of 37,900 liters. Ancillary equipment includes transfer pumps, a double-encased, fiberglass transfer pipeline, level instruments for tanker trucks, and leak detection equipment. From the Load-In Station, aqueous waste can be routed to the surge tank or to the LERF through a double-encased line. The load-in tanks, sump, pumps, and truck pad are all provided with secondary containment.

Surge Tank and Ancillary Equipment. The surge tank is constructed of stainless steel and has a nominal capacity of 379,000 liters. Ancillary equipment to the surge tank includes two underground double-encased (i.e., pipe-within-a-pipe) transfer lines connecting to LERF and three pumps for transferring aqueous waste to the primary treatment train. The surge tank is located at the south end of the ETF. The surge tank is insulated and the contents heated to prevent freezing. Eductors in the tank provide mixing.

Verification Tanks and Ancillary Equipment. The verification tanks are located north of the ETF. The verification tanks have a nominal capacity of 2,540,000 liters each. For support, the tanks have a center post with a webbing of beams that extend from the center post to the sides of the tank. The roof is constructed of epoxy covered carbon steel that is attached to the cross beams of the webbing. The tank floor also is constructed of epoxy covered carbon steel and is sloped. Eductors are installed in each tank to provide mixing.

Ancillary equipment includes a return pump that provides circulation of treated effluent through the eductors. The return pump also recycles effluent back to the ETF for retreatment and can provide service water for ETF functions. Two transfer pumps are used to discharge treated effluent to SALDS or back to the LERF.

4.4.1.3 Design Information for Tanks Located Inside the Effluent Treatment Facility Building. Most of the ETF tanks and ancillary equipment that store or treat dangerous and/or mixed waste are located within the ETF. The structure serves as secondary containment for the tank systems.

pH Adjustment Tank and Ancillary Equipment. The pH adjustment tank has a nominal capacity of 9,800 liters. Ancillary equipment for this tank includes overflow lines to a sump tank and pumps to transfer waste to other units in the main treatment train.

Effluent pH Adjustment Tank and Ancillary Equipment. The effluent pH adjustment tank has a nominal capacity of 9,500 liters. Ancillary equipment includes overflow lines to a sump tank and pumps to transfer waste to the verification tanks.

First and Second Reverse Osmosis Feed Tanks and Ancillary Equipment. The first RO feed tank is a vertical, stainless steel tank with a round bottom and has a nominal capacity of 11,400 liters. Conversely, the second RO feed tank is a rectangular vessel with the bottom of the tank sloping sharply to a single outlet in the bottom center. The second RO feed tank has a nominal capacity of 7,600 liters. Each RO tank has a pump to transfer waste to the RO arrays. Overflow lines are routed to a sump tank.

Secondary Waste Receiving Tanks and Ancillary Equipment. Two 57,000-liter secondary waste receiving tanks collect waste from the units in the main treatment train, such as reject solution (retentate) from the RO units and regeneration solution from the IX columns. These are vertical, cylindrical tanks with a semi-elliptical bottom and a flat top. Ancillary equipment includes overflow lines to a sump tank and pumps to transfer aqueous waste to the ETF evaporator.

Effluent Treatment Facility Evaporator and Ancillary Equipment. The ETF evaporator, the principal component of the evaporation process, is a cylindrical pressure vessel with a conical bottom. Aqueous waste is fed into the lower portion of the vessel. The top of the vessel is domed and the vapor outlet is configured to prevent carryover of liquid during the foaming or bumping (violent boiling) at the liquid surface. The ETF evaporator has a capacity of approximately 21,000 liters.

The ETF evaporator includes the following ancillary equipment:

- Preheater
- Recirculation pump
- Waste heater with steam level control tank
- Concentrate transfer pump
- Entrainment separator
- Vapor compressor with silencers
- Silencer drain pump.

Distillate Flash Tank and Ancillary Equipment. The distillate flash tank is a horizontal tank that has an nominal operating capacity of 570 liters. Ancillary equipment includes a pump to transfer the distillate to the surge tank for reprocessing.

Concentrate Tanks and Ancillary Equipment. Each of the two concentrate tanks has an approximate capacity of 18,900 liters. Ancillary equipment includes overflow lines to a sump tank and pumps for recirculation and transfer.

Sump Tanks. Sump tanks 1 and 2 are located below floor level. Both sump tanks are double-walled, rectangular tanks, placed inside concrete vaults. Both tanks have a working volume of 3,000 liters each. The sump tanks are located in pits belowgrade to allow gravity drain of solutions to the tanks. Each sump tank has two vertical pumps for transfer of waste to the secondary waste receiving tanks or to the surge tank for reprocessing.

4.4.1.4 Design Information for Effluent Treatment Facility Process Units. As with the ETF tanks, process units that treat and/or store dangerous and/or mixed waste are maintained at or near atmospheric pressure. These units were constructed to meet a series of design standards, as discussed in the following sections. Table 4-2 presents the materials of construction and the ancillary equipment associated with these process units. All piping systems are designed to withstand the effects of internal pressure, weight, thermal expansion and contraction, and any pulsating flow. The design and integrity of these units are presented in the engineering assessment (Mausshardt 1995).

Filters. The fine and rough filter vessels (including the auxiliary filters) are designed to comply with the ASME Section VIII, Division I, Pressure Vessels (ASME 1992a). The application of these standards to the construction of the ETF filter system and independent inspection ensure that the filter and filter supports have sufficient structural strength and that the seams and connections are adequate to ensure the integrity of the filter vessels.

Ultraviolet Oxidation System. The UV/OX reaction chamber is designed to comply with manufacturers standards.

Degasification System. The codes and standards applicable to the design, fabrication, and testing of the degasification column are identified as follows:

ASME Section VIII, Division I, Pressure Vessels (ASME 1992a)
ASME - B31.3, Chemical Plant and Petroleum Refinery Piping (ASME 1990)
AWS - D1.1, Structural Welding Code - Steel (AWS 1992)
ANSI - B16.5, Pipe Flanges and Flanged Fittings (ANSI 1992).

Reverse Osmosis System. The pressure vessels in the RO unit are designed to comply with ASME Section VIII, Division I, Pressure Vessels (ASME 1992a), and applicable codes and standards.

Ion Exchange (Polishers). The IX columns are designed in accordance with ASME Section VIII, Division I, Pressure Vessels (ASME 1992a), and applicable codes and standards. Polisher piping is fabricated of type 304 stainless steel or polyvinyl chloride (PVC) and meets the requirements of ASME B31.3, Chemical Plant and Petroleum Refinery Piping (ASME 1990).

Effluent Treatment Facility Evaporator. The ETF evaporator is designed to meet the requirements of ASME Section VIII, Division I, Pressure Vessels (ASME 1992a), and applicable codes and standards. The ETF evaporator piping meets the requirements of ASME B31.3, Chemical Plant and Petroleum Refinery Piping (ASME 1990).

Thin Film Dryer System. The thin film dryer is designed to meet the requirements of ASME Section VIII, Division I, Pressure Vessels (ASME 1992a), and applicable codes and standards. The piping meets the requirements of ASME - B31.3, Chemical Plant and Petroleum Refinery Piping (ASME 1990).

4.4.2 Integrity Assessments [D-2a(2)]

The integrity assessment for ETF (Mausshardt 1995) attests to the adequacy of design and integrity of the tanks and ancillary equipment to ensure that the tanks and ancillary equipment will not collapse, rupture, or fail over the intended life considering intended uses. For the load-in tanks, a similar integrity assessment was performed (KEH 1995). Specifically, the assessment documents the following considerations:

- Adequacy of the standards used during design and construction of the facility
- Characteristics of the solution in each tank
- Adequacy of the materials of construction to provide corrosion protection from the solution in each tank
- Results of the leak tests and visual inspections.

The results of these assessments demonstrate that tanks and ancillary equipment have sufficient structural integrity and are acceptable for storing and treating dangerous and/or mixed waste. The assessments also state that the tanks and building were designed and constructed to withstand a design-basis earthquake. These tank assessments were certified by independent, qualified registered professional engineers.

The scope of the ETF tank integrity assessment was based on characterization data from process condensate. To assess the effect that other aqueous waste might have on the integrity of the ETF tanks, the chemistry of an aqueous waste will be evaluated for its potential to corrode a tank (e.g., chloride concentrations will be evaluated). The tank integrity assessment for the load-in tanks was based on characterization data from several aqueous waste streams. The chemistry of an aqueous waste stream not considered in the load-in tank integrity assessment also will be evaluated for the potential to corrode a load-in tank.

Consistent with the recommendations of the integrity assessment, a corrosion inspection program was developed. Periodic integrity assessments are scheduled for those tanks that are predicted to have the highest potential for corrosion. These inspections are scheduled annually or longer to follow the end of a treatment campaign. These 'indicator tanks' include the concentrate tanks, secondary waste receiving tanks, and verification tanks. One of each of these tanks will be inspected yearly to determine if corrosion or coating failure has occurred. Should significant corrosion or coating failure be found, an additional tank of the same type will be inspected during the same year. In the case of the verification tanks, if corrosion or coating failure is found in the second tank, the third tank also will be inspected. If significant corrosion is observed in all three sets of indicator tanks, the balance of the ETF tanks would be considered for inspection. For tanks predicted to have lower potential for corrosion, inspections also are performed nonroutinely as part of the corrective maintenance program.

4.4.3 Additional Requirements for New Tanks [D-2a(4)]

Procedures for proper installation of tanks, tank supports, piping, concrete, etc., are included in *Construction Specification, Project C-018H, 242-A Evaporator/PUREX Plant Process Condensate Treatment Facility* (WHC 1992a). For the load-in tanks, procedures are included in the construction specifications in *Project W-291, 200 Area Effluent BAT/AKART Implementation ETF Truck Load-in Facility* (KEH 1994). Following installation, the tanks and secondary containment were inspected by an independent, qualified, registered professional engineer. Deficiencies identified included damage to the surge tank, damage to the verification tank liners, and ETF secondary containment concrete surface cracking. All deficiencies were repaired to the satisfaction of the engineer. The tanks and ancillary equipment were leak tested as part of acceptance of the system from the construction contractor. Information on the inspections and leak tests are included in the engineering assessment (Mausshardt 1995). No deficiencies were identified during installation of the load-in tanks and ancillary equipment.

4.4.4 Secondary Containment and Release Detection for Tank Systems [D-2b]

This section describes the design and operation of secondary containment and leak detection systems at the ETF.

4.4.4.1 Secondary Containment Requirements for All Tank Systems [D-2b(1)]. The specifications for the preparation, design, and construction of the secondary containment systems at the ETF are documented (WHC 1992a). The preparation, design, and construction of the secondary containment for the load-in tanks are provided in the construction specifications (KEH 1994). All systems were designed to national codes and standards. Constructing the ETF per these specifications ensured that foundations are capable of supporting tank and secondary containment systems and that uneven settling and failures from pressure gradients should not occur.

4.4.4.1.1 **Common Elements.** The following text describes elements of secondary containment that are common to all ETF tank systems. Details on the secondary containment for specific tanks, including leak detection systems and liquids removal, are provided in Section 4.4.5.1.

Foundation and Construction. For the tanks within the ETF, except for the sump tanks, secondary containment is provided by a coated concrete floor and a 15.2-centimeter rise (berm) along the containing walls. The double-wall construction of the sump tanks provides secondary containment. Additionally, trenches are provided in the floor that also provide containment and drainage of any liquid to a sump pit. For tanks outside the ETF, secondary containment also is provided with coated concrete floors in a containment pit (load-in tanks) or surrounded by concrete dikes (the surge and verification tanks).

The transfer piping that carries aqueous waste into the ETF is pipe-within-a-pipe construction, and is buried approximately 1.2 meters below ground surface. The pipes between the verification tanks and the verification tank pumps within the ETF are located in a concrete pipe trench.

For the purpose of this discussion, there are five discrete secondary containment systems associated with the following tanks and ancillary equipment that treat or store dangerous and/or waste:

- Load-in tanks
- Surge tank
- Process area (including sump tanks)
- Verification tanks
- Transfer piping and pipe trenches.

All of the secondary containment systems are designed with reinforcing steel and base and berm thickness to minimize failure caused by pressure gradients, physical contact with the waste, and climatic conditions. Classical theories of structural analysis, soil mechanics, and concrete and structural steel design were used in the design calculations for the foundations and structures. These calculations are maintained at the ETF. In each of the analyses, the major design criteria from the following documents were included:

- V-C018HC1-001 — Design Construction Specification, Project C-018H, 242A Evaporator/PUREX Plant Process Condensate Treatment Facility (WHC 1992a)
- DOE Order 6430.1A — General Design Criteria
- SDC-4.1 — Standard Architectural-Civil Design Criteria, Design Loads for Facilities (DOE-RL 1988)
- UCRL-15910 — Design and Evaluation Guidelines for Department of Energy Facilities Subjected to Natural Phenomena Hazards (UCRL 1987)
- UBC-91 — Uniform Building Code, 1991 Edition (ICBO 1991).

The design and structural analysis calculations substantiate the structural designs in the referenced drawings. The conclusions drawn from these calculations indicate that the designs are sound and that the specified structural design criteria were met. This conclusion is verified in the independent design review that was part of the engineering assessment (Mausshardt 1995).

Containment Materials. The concrete floor consists of cast-in-place and preformed concrete slabs. All slab joints and floor and wall joints have waterstops installed at the mid-depth of the slab. In addition, filler was applied to each joint.

Except for the sump tank vaults, all of the concrete surfaces in the secondary containment system, including berms, trenches, and pits, are coated with a chemical-resistant, high-solids, epoxy coating that consists of a primer, filler, and a top coating. This coating material is compatible with the waste being treated, and with the sulfuric acid, sodium hydroxide, and hydrogen peroxide additives to the process. The coating protects the concrete from contact with any chemical materials that might be harmful to concrete and prevents the concrete from being in contact with waste material. Table 4-3 summarizes the specifics types of filler, primer, second, and finish coats specified for the concrete and masonry surfaces in the ETF. The epoxy coating is considered integral to the secondary containment system for the tanks and ancillary equipment.

The concrete containment systems are maintained such that any cracks, gaps, holes, and other imperfections are repaired in a timely manner. Thus, the concrete containment systems do not allow spilled liquid to reach soil or groundwater. There are a number of personnel doorways and vehicle access points into the ETF process area. Releases of any spilled or leaked material to the environment from these access points are prevented by a 15.2-centimeter concrete curbs, sloped areas of the floor (e.g., truck ramp), or trenches.

Containment Capacity and Maintenance. Each of these containment areas is designed to contain more than 100 percent of the volume of the largest tank in each respective system. Secondary containment systems for the surge tank, and the verification tanks, which are outside the ETF, also are large enough to include the additional volume from a 100-year, 24-hour storm event; i.e., 5.3 centimeters of precipitation.

Sprinkler System. The sprinkler system within the ETF supplies fire water protection to the process area and the container storage area. This system is connected to a sitewide water supply system and has the capacity to supply sufficient water to suppress a fire at the ETF. However, in the event of failure, the sprinkler system can be hooked up to another water source (e.g., tanker truck).

4.4.4.1.2 **Specific Containment Systems.** The following discussion presents a description of the individual containment systems associated with specific tank systems.

Load-In Tank Secondary Containment. The load-in tanks are mounted on a 46-centimeter-thick reinforced concrete slab (Drawing H-2-817970, Appendix 4B). Secondary containment is provided by a pit with 30.5-centimeter-thick walls and a floor constructed of reinforced concrete. The load-in tank pit is sloped to drain solution to a sump. The depth of the pit varies with the slope of the floor, with an average thickness of about 1.1 meters. The volume of the secondary containment is about 79,000 liters, which is capable of containing the volume of at least one load-in tank (i.e., 37,800 liters). Leaks are detected by a leak detector that alarms locally and in the ETF control room and by visual inspection of the secondary containment.

Adjacent to the pit is a 25.4-centimeter-thick reinforced concrete pad that serves as secondary containment for the load-in tanker trucks and

transfer pumps. The pad is 15.2 centimeters below grade with north and south walls gently sloped to allow truck access. The pad has drain pipes to route waste to the adjacent load-in tank pit.

Surge Tank Secondary Containment. The surge tank is mounted on a reinforced concrete ringwall. Inside the ringwall, the flat-bottomed tank is supported by a bed of compacted sand and gravel with a high-density polyethylene liner bonded to the ringwall. The liner prevents galvanic corrosion between the soil and the tank. The secondary containment is reinforced concrete with a 15.2-centimeter thick floor and a 20.3-centimeter thick dike. The secondary containment area shares part of the southern wall of the main process area. The dike extends up 2.9 meters to provide a containment volume of 740,000 liters for the 379,000 liter surge tank.

The floor of the secondary containment slopes to a sump in the northwest corner of the containment area. Leaks into the secondary containment are detected by level instrumentation in the sump, which alarms in the ETF control room, and/or by routine visual inspections. A sump pump is used to transfer solution in the secondary containment to a sump tank.

Process Area Secondary Containment. The process area contains the tanks and ancillary equipment of the primary and secondary treatment trains, and has a jointed, reinforced concrete slab floor. The concrete floor of the process area provides the secondary containment. This floor is a minimum of 15.2 centimeters thick. With door sills 15.2 centimeter high, the process area has a containment volume of 76,200 liters. The largest tanks in the process area are the secondary waste receiving tanks, which each have a maximum capacity of 56,800 liters.

The floor of the process area is sloped to drain liquids to two trenches that drain to a sump. Each trench is approximately 38.1 centimeters wide with a sloped trough varying from 39.4 to 76.2 centimeters deep. Leaks into the secondary containment are detected by routine visual inspections of the floor area near the tanks, ancillary equipment, and in the trenches.

The northwest corner of the process area consists of a pump pit containing the pumps and piping for transferring treated effluent from the verification tanks to SALDS. The pit is built 1.37 meters below the process area floor level and is sloped to drain to a trench built along its north wall that routes liquid to sump tank 1. Leaks into the secondary containment of the pump pit are detected by routine visual inspections.

Sump Tanks. The sump tanks support the secondary containment system, and collect waste from several sources, including:

- Process area drain trenches
- Tank overflows and drains
- Container washing water
- Resin dewatering solution
- Steam boiler blowdown
- Sampler system drains.

These double-contained tanks are located within unlined, concrete vaults. The sump tank levels are monitored by remote level indicators or through visual inspections from the sump covers. These indicators are connected to high- and low-level alarms that are monitored in the control room. When a high-level alarm is activated, a pump is activated and the sump tank contents usually are routed to the secondary treatment train for processing. The contents also could be routed to the surge tank for treatment in the primary treatment train. In the event of an abnormally high inflow rate, a second sump pump is initiated automatically.

Verification Tank Secondary Containment. The three verification tanks are each mounted on ringwalls with high-density polyethylene liners similar to the surge tank. The secondary containment for the three tanks is reinforced concrete with a 15.2-centimeter thick floor and a 20.3-centimeter thick dike. The dike extends up 2.6 meters to provide a containment of 110 percent of the capacity of a single tank (i.e., 2,800,000 liters).

The floor of the secondary containment slopes to a sump along the southern wall of the dike. Leaks into the secondary containment are detected by level instrumentation in the sump that alarms in the control room and/or by routine visual inspections. A sump pump is used to transfer solution in the secondary containment to a sump tank.

4.4.4.2 Additional Requirements for Specific Types of Systems [D-2b(2)]. This section addresses additional requirements in WAC 173-303-640 for double-walled tanks like the sump tanks and secondary containment for ancillary equipment and piping associated with the tank systems.

4.4.4.2.1 Double-Walled Tanks [D-2b(2)(b)]. The sump tanks are the only tanks in the ETF classified as 'double-walled' tanks. These tanks are located in unlined concrete vaults and support the secondary containment system for the process area. The sump tanks are equipped with a leak detector between the walls of the tanks that provide continuous monitoring for leaks. The leak detector provides immediate notification through an alarm in the control room. The inner tanks are contained completely within the outer shells. The tanks are contained completely within the concrete structure of the ETF so corrosion protection from external galvanic corrosion is not necessary.

4.4.4.2.2 Ancillary Equipment [D-2b(2)(c)]. The secondary containment provided for the tanks and process systems also serves as secondary containment for the ancillary equipment associated with these systems.

Ancillary Equipment. Section 4.4.5.1 describes the secondary containment systems that also serve most of the ancillary equipment within the ETF. Between the ETF and the verification tanks, a pipeline trench provides secondary containment for four pipelines connecting the transfer pumps (i.e., discharge and return pumps) in the ETF with the verification tanks (Figure 4-1). This concrete trench crosses under the road and extends from the verification tank pumps to the verification tanks. Treated effluent flows through these pipelines from the verification tank pumps to the verification tanks. The return pump is used to return effluent to the ETF for use as service water or for reprocessing.

For all of the ancillary equipment housed within the ETF, the concrete floor, trenches, and berms form the secondary containment system. For the ancillary equipment of the surge tank and the verification tanks, secondary containment is provided by the concrete floors and dikes associated with these tanks. The concrete floor and pit provide secondary containment for the ancillary equipment of the load-in tanks.

Transfer Piping and Pipe Trenches. The two buried transfer lines between LERF and the surge tank have secondary containment in a pipe-within-a-pipe arrangement. The 4-inch transfer line has an 8-inch outer pipe, while the 3-inch transfer line has a 6-inch outer pipe. The pipes are fiberglass and are sloped towards the surge tank. The outer piping ends with a drain valve in the surge tank secondary containment.

These pipelines are equipped with leak detection located in the annulus between the inner and outer pipes, which have the ability to continuously 'inspect' the pipelines during aqueous waste transfers. The alarms on the leak detection system are monitored in the control room. In the event that these leak detectors are not in service, the pipelines are inspected during transfers by opening a drain valve to check for solution in the annular space between the inner and outer pipe.

The 3-inch transfer line between the load-in tanks and the surge tank has a 6-inch outer pipe in a pipe-within-a-pipe arrangement. The piping is made of fiberglass reinforced plastic and slopes towards the load-in tank secondary containment pit. The drain valve and leak detection system for the load-in tank pipelines are operated similarly to the leak detection system for the LERF to ETF pipelines.

As previously indicated, there are four reinforced concrete pipe trenches that provide secondary containment for piping under the roadway between the ETF and the verification tanks. Each trench is 1.2 meters wide and 0.76 meter deep and slopes towards the sump containing the transfer pumps to SALDS. The floor of the trenches are 30.5 centimeters thick and the sides are 15.2 centimeters thick. The concrete trenches are coated with water sealant and covered with metal gratings at ground level to allow vehicle traffic on the roadway.

4.4.5 Tank Management Practices [D-2d]

When an aqueous waste stream is identified for treatment or storage at ETF, the generating unit is required to characterize the waste. Based on characterization data, the waste stream is evaluated to determine if the stream is acceptable for treatment or storage. Specific tank management practices are discussed in the following sections.

4.4.5.1 Rupture, Leakage, Corrosion Prevention. Most aqueous waste streams can be managed such that corrosion would not be a concern. For example, an aqueous waste stream with high concentrations of chloride might cause corrosion problems when concentrated in the secondary treatment train. One approach is to adjust the corrosion control measures in the secondary

treatment train. An alternative might be to blend this aqueous waste in a LERF basin with another aqueous waste that has sufficient dissolved solids, such that the concentration of the chlorides in the secondary treatment train would not pose a corrosion concern.

Additionally, the materials of construction used in the tanks systems (Table 4-1) make it unlikely that a aqueous waste would corrode a tank. For more information on corrosion prevention, refer to the waste analysis plan (Appendix 3A).

When a leak in a tank system is discovered, the leak is immediately contained or stopped by isolating the leaking component. Following containment, the leaking tank system is evaluated by facility personnel to determine whether continued operation of affected system would jeopardize the safety of plant personnel, result in a release to the environment, or compromise facility equipment. If it is determined that a leak could have the aforementioned consequences, the affected system will be immediately removed from service until repairs can be implemented. If a leak would not result in the stated consequences, the tank system will be placed on a maintenance schedule for repair.

4.4.5.2 Overfilling Prevention. Operating practices and administrative controls used at the ETF to prevent overfilling a tank are discussed in the following paragraphs. The ETF process is controlled by the MCS. The MCS monitors liquid levels in the ETF tanks and has alarms that annunciate on high-liquid level to notify operators that actions must be taken to prevent overfilling of these vessels. As an additional precaution to prevent spills, many tanks are equipped with overflow lines that route solutions to sump tanks 1 and 2. These tanks include the pH adjustment tank, RO feed tanks, effluent pH adjustment tank, secondary waste receiving tanks, and concentrate tanks.

The following section discusses feed systems, safety cutoff devices, bypass systems, and pressure controls for specific tanks and process systems.

Tanks. All tanks are equipped with liquid level sensors that give a reading of the tank liquid volume. The surge tank, the verification tanks, the RO tanks, the secondary waste receiving tanks, and the concentrate tanks are equipped further with liquid level alarms that are actuated if the liquid volume is near the tank overflow capacity. In the actuation of the surge tank alarm, a liquid level switch trips, sending a signal to the valve actuator on the tank influent lines, causing the influent valves to close.

The operating mode for each verification tank, i.e., receiving, holding, or discharging, can be designated through the MCS; modes also switch automatically. When the high-level set point on the receiving verification tank is reached, the flow to this tank is diverted and another tank becomes the receiver. The full tank is switched into verification mode. The third tank is reserved for discharge mode.

The liquid levels in the first and second RO feed tanks are maintained within predetermined operating ranges. Should the second RO feed tank overflow, the excess waste is piped along with any leakage from the feed pump to a sump tank.

When waste in a secondary waste receiving tank reaches the high-level set point, the influent flow of waste is redirected to the second tank and the first tank becomes the feed tank for the ETF evaporator.

In a similar fashion, the concentrate tanks switch modes when the high-level set point of one tank is reached. The other tank switches from a discharging mode to a receiving mode and the first tank becomes the discharge tank feeding waste to the thin film dryer.

Filter Systems. Both the rough filter and fine filter are in leak-tight steel casings. A high differential pressure, which could damage the filter element, deactivates a valve that shuts off liquid flow to protect the filter element from possible damage. To prevent a high pressure situation, the filters are cleaned routinely with pulses of compressed air that force water back through the filter. Cleaning is terminated automatically by shutting off the compressed air supply if high pressure develops. The differential pressure across the auxiliary filters also is monitored. A high differential pressure in these filters would result in a system shutdown to allow the filters to be changed out.

Ultraviolet Light/Oxidation System and Decomposers. A rupture disk on the inlet piping to each of the UV/OX reaction vessels relieves to the pH adjustment tank in the event of excessive pressure developing in the piping system. Should the rupture disk fail, the aqueous waste would trip the moisture sensor, shut down the UV lamps, and close the surge tank feed valve. Also provided is a level sensor to protect UV lamps against the risk of exposure to air. Should those sensors be actuated, the UV lamps would be shut down immediately.

The piping and valving for the hydrogen peroxide decomposers are configured to split the waste flow: half flows to one decomposer and half flows to the other decomposer. Alternatively, the total flow of waste can be treated in one decomposer or both decomposers can be bypassed. A safety relief valve on each decomposer vessel can relieve excess system pressure to a sump tank.

Degasification System. The degasification column is typically supplied aqueous waste feed by the pH adjustment tank feed pump. This pump transfers waste solution through the hydrogen peroxide decomposer, the fine filter, and the degasification column to the first RO feed tank.

The degasification column is designed for operation at a partial vacuum. A pressure sensor in the column detects the column pressure. The vacuum in the degasification column is maintained by a blower connected to the vessel offgas system. The column is protected from extremely low pressure developed by the column blower by the use of an intake vent that is maintained in the open position during operation. The column liquid level is regulated by a

flow control system with a high- and low-level alarm. A plate-type heat exchanger cools the waste solution fed to the degasification column.

Reverse Osmosis System. The flow through the first and second RO stages is controlled to maintain constant liquid levels in the first and second stage RO feed tanks.

Polisher. Typically, two of the three columns are in operation (lead/lag) and the third (regenerated) column is in standby. When the capacity of the resin in the first column is exceeded, as detected by an increase in the conductivity of the column effluent, the third column, containing freshly regenerated IX resin, is brought online. The first column is taken offline, and the waste is rerouted to the second column, and to the third. Liquid level instrumentation and automatically operated valves are provided in the IX system to prevent overfilling.

Effluent Treatment Facility Evaporator. Liquid level instrumentation in the secondary waste receiving tanks is designed to preclude a tank overflow. A liquid level switch actuated by a high-tank liquid level causes the valves to reposition, closing off flow to the secondary waste receiving tanks. Secondary containment for these tanks routes liquids to a sump tank.

Valves in the ETF evaporator feed line can be positioned to bypass the secondary waste around the ETF evaporator and to transfer the secondary waste to the concentrate tanks.

Thin Film Dryer. The two concentrate tanks alternately feed the thin film dryer. One tank serves as a concentrate waste receiver while the other tank serves as the dryer feed tank. Liquid level instrumentation prevents tank overflow by diverting the concentrate flow from the full concentrate tank to the other concentrate tank. Secondary containment for these tanks routes liquids to a sump tank.

An alternate route is provided from the concentrate receiver tank to the secondary waste receiving tanks. Dilute concentrate in the concentrate receiver tank can be reprocessed through the ETF evaporator by transferring the concentrate back to a secondary waste receiving tank.

4.4.6 Labels or Signs [D-2e]

Each tank or process unit in the ETF is identified by a nameplate attached in a readily visible location. Included on the nameplate are the equipment number and the equipment title. Those tanks which store or treat dangerous waste at the ETF (Section 4.4.1.1) are identified with a label which reads "PROCESS WATER/WASTE". The labels are legible at a distance of at least fifty feet or as appropriate for legibility within the ETF. Additionally, these tanks bear a legend that identifies the waste in a manner which adequately warns employees, emergency personnel, and the public of the major risk(s) associated with the waste being stored or treated in the tank system(s).

Caution plates are used to show possible hazards and warn that precautions are necessary. Caution signs have a yellow background and black panel with yellow letters and bear the word "CAUTION". Danger signs show immediate danger and signify that special precautions are necessary. These signs are red, black, and white and bear the word "DANGER".

Tanks and vessels containing corrosive chemicals are posted with black and white signs bearing the word "CORROSIVE". "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT" signs are posted on all exterior doors of the ETF, and on each interior door leading into the process area. Tank ancillary piping is also labeled "PROCESS WATER" or "PROCESS LIQUID" to alert personnel which pipes in the process area contain dangerous and/or mixed waste.

4.4.7 Air Emissions [D-2f]

Tank systems that contain extremely hazardous waste that is acutely toxic by inhalation must be designed to prevent the escape of such vapors. To date, no extremely hazardous waste has been managed in ETF tanks and is not anticipated. However, the ETF tanks have forced ventilation that draws air from the tank vapor spaces to prevent exposure of operating personnel to any toxic vapors that might be present. The vapor passes through a charcoal filter and two sets of high-efficiency particulate air filters before discharge to the environment.

4.4.8 Management of Ignitible or Reactive Wastes in Tanks Systems [D-2g]

Although the ETF is permitted to accept waste that is designated ignitible or reactive, such waste would be treated or blended immediately after placement in the tank system so that the resulting waste mixture is no longer ignitible or reactive. Aqueous waste received 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.

4.4.9 Management of Incompatible Wastes in Tanks Systems [D-2h]

The ETF manages dilute solutions that can be mixed without compatibility issues. The ETF is equipped with several systems that can adjust the pH of the waste for treatment activities. Sulfuric acid and sodium hydroxide are added to the process through the MCS for pH adjustment to ensure there will be no large pH fluctuations and adverse reactions in the tank systems.

4.5 SURFACE IMPOUNDMENTS [173-303-806-(4)(d)]

This section provides specific information on surface impoundment operations at the LERF, including descriptions of the liners and secondary containment structures, as required by WAC 173-303-650 and WAC 173-303-806(4)(d).

The LERF consists of three lined surface impoundments (basins) with a design capacity of 24.6 million liters each. The maximum capacity of each basin is 34 million liters. The dimensions of each basin at the anchor wall are approximately 103 meters by 85 meters. The typical top dimensions of the wetted area are approximately 89 meters by 71 meters, while the bottom dimensions are approximately 57 by 38 meters. Total depth from the top of the dike to the bottom of the basin is approximately 7 meters. The typical finished basin bottoms lie at about 4 meters below the initial grade and 175 meters above sea level. The dikes separating the basins have a typical height of 3 meters and typical top width of 11.6 meters around the perimeter of the impoundments.

4.5.1 List of Dangerous Waste [806(4)(d)(i)]

A list of dangerous and/or mixed aqueous waste that can be stored in LERF is presented in Chapter 1.0. The waste analysis plan for the LERF and ETF (Appendix 3A) also provides a discussion of the types of waste that are managed in the LERF.

4.5.2 Construction, Operation, and Maintenance of Liner System [806(4)(d)(ii)(A)]

General information concerning the liner system is presented in the following sections. Information regarding loads on the liner, liner coverage, UV light exposure prevention, and location relative to the water table also are discussed.

4.5.2.1 Liner Construction Materials [650(2)(a)(i)(A)]. The LERF employs a double-composite liner system with a leachate detection, collection, and removal system between the primary and secondary liners. Each basin is constructed with an upper or primary liner consisting of a high-density polyethylene geomembrane laid over a bentonite carpet liner. The lower or secondary liner in each basin is a composite of a geomembrane laid over a layer of soil/bentonite admixture with a hydraulic conductivity less than 10^{-7} centimeters per second. The synthetic liners extend up the dike wall to a concrete anchor wall that completely surrounds the basin at the top of the dike. A batten system bolts the layers in place to the anchor wall (Figure 4-15).

Figure 4-16 is a schematic cross-section of the liner system. The liner components, listed from the top to the bottom of the liner system, are the following:

- Primary 1.5-millimeter high-density polyethylene geomembrane
- Bentonite carpet liner
- Geotextile
- Drainage gravel (bottom) and geonet (sides)
- Geotextile
- Secondary 1.5-millimeter high-density polyethylene geomembrane
- Soil/bentonite admixture (91 centimeters on the bottom, 107 centimeters on the sides)
- Geotextile.

The primary geomembrane, made of 1.5-millimeter high-density polyethylene, forms the basin surface that holds the aqueous waste. The secondary geomembrane, also 1.5-millimeter high-density polyethylene, forms a barrier surface for leachate that might penetrate the primary liner. The high-density polyethylene chemically is resistant to constituents in the aqueous waste and has a relatively high strength compared to other lining materials. The high-density polyethylene resin specified for the LERF contains carbon black, antioxidants, and heat stabilizers to enhance its resistance to the degrading effects of UV light. The approach to ensuring the compatibility of aqueous waste streams with the LERF liner materials and piping is discussed in the waste analysis plan (Appendix 3A).

Three geotextile layers are used in the LERF liner system. The layers are thin, nonwoven polypropylene fabric that chemically are resistant, highly permeable, and resistant to microbiological growth. The first two layers prevent fine soil particles from infiltrating and clogging the drainage layer. The second geotextile also provides limited protection for the secondary geomembrane from the drainage rock. The third geotextile layer prevents the mixing of the soil/bentonite admixture with the much more porous and granular foundation material.

A 30.5-centimeters-thick gravel drainage layer on the bottom of the basins between the primary and secondary liners provides a flow path for liquid to the leachate detection, collection, and removal system. A geonet (or drainage net) is located immediately above the secondary geomembrane on the basin sidewalls. The geonet functions as a preferential flow path for liquid between the liners, carrying liquid down to the gravel drainage layer and subsequently to the leachate sump. The geonet is a mesh made of high-density polyethylene, with approximately 13-millimeter openings.

The soil/bentonite layer is 97 centimeters thick on the bottom of the basins and 107 centimeters thick on the basin sidewalls; its permeability is less than 10^{-7} centimeters per second. This composite liner design, consisting of a geomembrane laid over essentially impermeable soil/bentonite, is considered best available technology for solid waste landfills and surface impoundments. The combination of synthetic and clay liners is reported in the literature to provide the maximum protection from waste migration (Forseth and Kmet 1983).

A number of laboratory tests were conducted to measure the engineering properties of the soil/bentonite admixture, in addition to extensive field tests performed on three test fills constructed near the LERF site. For the purpose of establishing an optimum ratio of bentonite to soil for the soil/bentonite admixture, mixtures of various ratios were tested to determine permeability and shear strength. A mixture of 12 percent bentonite was selected for the soil/bentonite liner and tests described in the following paragraphs demonstrated that the admixture meets the desired permeability of less than 10^{-7} centimeters per second. Detailed discussion of test procedures and results is provided in *Report of Geotechnical Investigation, 242-A Evaporation and PUREX Interim Storage Basins* (Chen-Northern 1990).

Direct shear tests were performed according to ASTM D3080 test procedures (ASTM 1990) on soil/bentonite samples of various ratios. Based on these results, the conservative minimum Mohr-Coulomb shear strength value of 30 degrees was estimated for a soil/bentonite admixture containing 12 percent bentonite.

The high degree of compaction of the soil/bentonite layer [92 percent per ASTM D1557 (ASTM 1991)] was expected to maximize the bonding forces between the clay particles, thereby minimizing moisture transport through the liner. With respect to particle movement ('piping'), estimated fluid velocities in this low-permeability material are too low to move the soil particles. Therefore, piping is not considered a problem.

For the soil/bentonite layer, three test fills were constructed to demonstrate that materials, methods, and procedures used would produce a soil/bentonite liner that meets the EPA permeability requirement of less than 10^{-7} centimeters per second. All test fills met the EPA requirements. A thorough discussion of construction procedures, testing, and results is provided in *Report of Permeability Testing, Soil-bentonite Test Fill* (Chen-Northern 1991a).

The aqueous waste stored in the LERF is typically a dilute mixture of organic and inorganic constituents. Though isolated instances of soil liner incompatibility have been documented in the literature (Forseth and Kmet 1983), these instances have occurred with concentrated solutions that were incompatible with the geomembrane liners in which the solutions were contained. Considering the dilute nature of the aqueous waste that is and will be stored in LERF and the moderate pH, and test results demonstrating the compatibility of the high-density polyethylene liners with the aqueous waste [*9090 Test Results* (WHC 1991)], gross failure of the soil/bentonite layer is not probable.

Each basin also is equipped with a floating very low-density polyethylene cover. The cover is anchored and tensioned at the concrete wall at the top of the dikes, using a patented mechanical tensioning system. Figure 4-15 depicts the tension mechanism and the anchor wall at the perimeter of each basin. Additional information on the cover system is provided in Section 4.5.2.5.

4.5.2.1.1 Material Specifications. Material specifications for the liner system and leachate collection system, including liners, drainage gravel, and drainage net are discussed in the following sections. Material specifications are documented in the *Final Specifications 242-A Evaporator and PUREX Interim Retention Basins* (KEH 1990a) and *Construction Specifications for 242-A Evaporator and PUREX Interim Retention Basins* (KEH 1990b).

Geomembrane Liners. The high-density polyethylene resin for geomembranes for the LERF meets the material specifications listed in Table 4-4. Key physical properties include thickness (1.5 millimeters [60 mil]) and impermeability (hydrostatic resistance of over 360,000 kilogram per square meter). Physical properties meet National Sanitation Foundation Standard 54 (NSF 1985). Testing to determine if the liner material is compatible with typical dilute waste solutions was performed and documented in *9090 Test Results* (WHC 1991).

Soil/Bentonite Liner. The soil/bentonite admixture consists of 11.5 to 14.5 percent bentonite mixed into well-graded silty sand with a maximum particle size of 4.75 millimeters (No. 4 sieve). Test fills were performed to confirm the soil/bentonite admixture applied at LERF has hydraulic conductivity less than 10^{-7} centimeters per second, as required by WAC 173-303-650(2)(j) for new surface impoundments.

Bentonite Carpet Liner. The bentonite carpet liner consists of bentonite (90 percent sodium montmorillonite clay) in a primary backing of woven polypropylene with nylon filler fiber, and a cover fabric of open weave spunlace polyester. The montmorillonite is anticipated to retard migration of solution through the liner, exhibiting a favorable cation exchange for adsorption of some constituents (such as ammonium). Based on composition of the bentonite carpet and of the type of aqueous waste stored at LERF, no chemical attack, dissolution, or degradation of the bentonite carpet liner is anticipated.

Geotextile. The nonwoven geotextile layers consist of long-chain polypropylene polymers containing stabilizers and inhibitors to make the filaments resistant to deterioration from UV light and heat exposure. The geotextile layers consist of continuous geotextile sheets held together by needle-punching. Edges of the fabric are sealed or otherwise finished to prevent outer material from pulling away from the fabric or ravelling.

Drainage Gravel. The drainage layer consists of thoroughly washed and screened, naturally occurring rock meeting the size specifications for Grading Number 5 in Washington State Department of Transportation construction specifications (WSDOT 1988). The specifications for the drainage layer are given in Table 4-5. Hydraulic conductivity tests (Chen-Northern 1992a, 1992b, 1992c) showed the drainage rock used at LERF met the sieve requirements and

had a hydraulic conductivity of at least 1 centimeter per second, which exceeded the minimum of at least 0.1 centimeters per second required by WAC 173-303-650(2)(j) for new surface impoundments.

Geonet. The geonet is fabricated from two sets of parallel high-density polyethylene strands, spaced 1.3 centimeters center-to-center maximum to form a mesh with minimum two strands per 2.54 centimeter in each direction. The geonet is located between the liners on the sloping sidewalls to provide a preferential flow path for leachate to the drainage gravel and subsequently to the leachate sump.

Leachate Collection Sump. Materials used to line the 3.0-meter by 1.8-meter by 0.30-meter-deep leachate sump, at the bottom of each basin in the northwest corner, include [from top to bottom (Figure 4-17)]:

- 25 millimeter high-density polyethylene flat stock (supporting the leachate riser pipe)
- Geotextile
- 1.5-millimeter high-density polyethylene rub sheet
- Secondary composite liner:
  - 1.5-millimeter high-density polyethylene geomembrane
  - 91 centimeters of soil/bentonite admixture
  - Geotextile.

Specifications for these materials are identical to those discussed previously.

Leachate System Risers. Risers for the leachate system consist of 10-inch and 4-inch pipes from the leachate collection sump to the catch basin northwest of each basin (Figure 4-17). The risers lay below the primary liner in a gravel-filled trench which also extends from the sump to the concrete catch basin (Figure 4-18).

The risers are high-density polyethylene pipes fabricated to meet the requirements in ASTM D1248 (ASTM 1989). The 10-inch riser is perforated every 20.3 centimeters with 1.3-centimeter holes around the diameter. Level sensors and leachate pump are inserted in the 10-inch riser to monitor and remove leachate from the sump. To prevent clogging of the pump and piping with fine particulate, the end of the riser is encased in a gravel-filled box constructed of high-density polyethylene geonet and wrapped in geotextile. The 4-inch riser is perforated every 10.2 centimeters with 0.64-centimeter holes around the diameter. A level detector is inserted in the 4-inch riser.

Leachate Pump. A deep-well submersible pump, designed to deliver approximately 110 liters per minute, is installed in the 10-inch leachate riser in each basin. Wetted parts of the leachate pump are made of 316L stainless steel, providing both corrosion resistance and durability.

4.5.2.1.2 **Loads on Liner System.** The LERF liner system is subjected to the following types of stresses.

Stresses from Installation or Construction Operations. Contractors were required to submit construction quality control plans that included procedures, techniques, tools, and equipment used for the construction and care of liner and leachate system. Methods for installation of all components were screened to ensure that the stresses on the liner system were kept to a minimum.

Calculations were performed to estimate the risk of damage to the secondary high-density polyethylene liner during construction (*Calculations for LERF Part B Permit Application* [HNF 1997]). The greatest risk expected was from spreading the gravel layer over the geotextile layer and secondary geomembrane. The results of the calculations show that the strength of the geotextile was sufficiently high to withstand the stress of a small gravel spreader driving on a minimum of 15 centimeters of gravel over the geotextile and geomembrane. The likelihood of damage to the geomembrane lying under the geotextile was considered to be low.

To avoid driving heavy machinery directly on the secondary liner, a 28-meter conveyer was used to deliver the drainage gravel into the basins. The gravel was spread and consolidated by hand tools and a bulldozer. The bulldozer traveled on a minimum thickness of 30.5 centimeters of gravel. Where the conveyer assembly was placed on top of the liner, cribbing was placed to distribute the conveyer weight. No heavy equipment was allowed for use directly in contact with the geomembranes.

Additional calculations were performed to estimate the ability of the leachate riser pipe to withstand the static and dynamic loading imposed by lightweight construction equipment riding on the gravel layer (HNF 1997). Those calculations demonstrated that the pipe could buckle under the dynamic loading of small construction equipment; therefore, the pipe was avoided by equipment during spreading of the drainage gravel.

Installation of synthetic lining materials proceeded only when winds were less than 24 kilometers per hour, and not during precipitation. The minimum ambient air temperature for unfolding or unrolling the high-density polyethylene sheets was -10°C, and a minimum temperature of 0°C was required for seaming the high-density polyethylene sheets. Between shifts, geomembranes and geotextile were anchored with sandbags to prevent lifting by wind. Calculations were performed to determine the appropriate spacing of sandbags on the geomembrane to resist lifting caused by 130 kilometer per hour winds (HNF 1997). All of the synthetic components contain UV light inhibitors and no impairment of performance is anticipated from the short-term UV light exposure during construction. Section 4.5.2.5 provides further detail on exposure prevention.

During laying of the soil/bentonite layer and the overlying geomembrane, moisture content of the admixture was monitored and adjusted to ensure optimum compaction and to avoid development of cracks.

4.5.2.1.3 Static and Dynamic Loads and Stresses from the Maximum Quantity of Waste. When a LERF basin is full, liquid depth is approximately 6.4 meters. Static load on the primary liner is roughly 6,400 kilograms per square meter. Load on the secondary liner is slightly higher because of the weight of the gravel drainage layer. Assuming a density of 805 kilograms per square meter for the drainage gravel [conservative estimate based on specific gravity of 2.65 (Ambrose 1988)], the secondary high-density polyethylene carries approximately 7,200 kilograms per square meter when a basin is full.

Sideslope liner stresses were calculated for each of the layers in the basin sidewalls and for the pipe trench on the northwest corner of each basin (HNF 1997). Results of these calculations indicate factors of safety against shear were 1.5 or greater for the primary geomembrane, geotextile, geonet, and secondary geomembrane.

Because the LERF is not located in an area of seismic concern, as identified in Appendix VI of 40 CFR 264 and WAC 173-303-282(6)(a)(i), discussion and calculation of potential seismic events are not required.

4.5.2.1.4 Stresses Resulting from Settlement, Subsidence, or Uplift. Uplift stresses from natural sources are expected to have negligible impact on the liner. Groundwater lies approximately 62 meters below the LERF, average annual precipitation is only 16 centimeters, and the average unsaturated permeability of the soils near the basin bottoms is high, ranging from about 5.5×10^{-4} centimeters per second to about 1 centimeter per second (Chen-Northern 1991b). Therefore, no hydrostatic uplift forces are expected to develop in the soil underneath the basins. In addition, the soil under the basins consists primarily of gravel and sand, and contains few or no organic constituents. Therefore, uplift caused by gas production from organic degradation is not anticipated.

Based on the design of the soil-bentonite liner, no structural uplift stresses are present within the lining system (Chen-Northern 1991b).

Regional subsidence is not anticipated because neither petroleum nor extractable economic minerals are present in the strata underlying the LERF basins, nor is karst (erosive limestone) topography present.

Dike soils and soil/bentonite layers were compacted thoroughly and proof-rolled during construction. Calculation of settlement potential showed that combined settlement for the foundation and soil/bentonite layer is expected to be about 2.7 centimeters. Settlement impact on the liner and basin stability is expected to be minimal (Chen-Northern 1991b).

4.5.2.1.5 Internal and External Pressure Gradients. Pressure gradients across the liner system from groundwater are anticipated to be negligible. The LERF is about 62 meters above the seasonal high water table, which prevents buildup of water pressure below the liner. The native gravel foundation materials of the LERF are relatively permeable and free draining. The 2 percent slope of the secondary liner prevents the pooling of liquids on top of the secondary liner. Finally, the fill rate of the basins is slow

enough (average 190 liters per minute) that the load of the liquid waste on the primary liner is gradually and evenly distributed.

To prevent the buildup of gas between the liners, each basin is equipped with 21 vents in the primary geomembrane that allow the reduction of any excess gas pressure. Gas passing through these vents exit through a single pipe that penetrates the anchor wall into a carbon adsorption filter. This filter extracts nearly all of the organic compounds, ensuring that emissions to the air from the basins are not toxic.

4.5.2.2 Liner System Location Relative to High-Water Table. The lowest point of each LERF basin is the northwest corner of the sump, where the typical subgrade elevation is 175 meters above mean sea level. Based on data collected from the groundwater monitoring wells at the LERF site, the seasonal high-water table is located approximately 62 meters or more below the lowest point of the basins. This substantial thickness of unsaturated strata beneath the LERF provides ample protection to the liner from hydrostatic pressure because of groundwater intrusion into the soil/bentonite layer. Further discussion of the unsaturated zone and site hydrogeology is provided in Chapter 5.0.

4.5.2.3 Liner System Foundation [650(2)(a)(i)(B)]. Foundation materials are primarily gravels and cobbles with some sand and silt. The native soils onsite are derived from unconsolidated Holocene sediments. These sediments are fluvial and glaciofluvial sands and gravels deposited during the most recent glacial and postglacial event. Grain-size distributions and shape analyses of the sediments indicate that deposition occurred in a high energy environment (Chen-Northern 1990).

Analysis of five soil borings from the LERF site was conducted to characterize the natural foundation materials and to determine the suitability of onsite soils for construction of the impoundment dikes and determine optimal design factors. Well-graded gravel containing varying amounts of silt, sand, and cobbles comprises the layer in which the basins were excavated. This gravel layer extends to depths of 10 to 11 meters below land surface (Chen-Northern 1990). The basins are constructed directly on the subgrade. Excavated soils were screened to remove oversize cobbles (greater than 15 centimeters in the largest dimension) and used to construct the dikes.

Settlement potential of the foundation material and soil/bentonite layer was found to be low. The foundation is comprised of undisturbed native soils. The bottom of the basin excavation lies within the well-graded gravel layer, and is dense to very dense. Below the gravel is a layer of dense to very dense poorly-graded and well-graded sand. Settlement was calculated for the gravel foundation soils and for the soil/bentonite layer, under the condition of hydrostatic loading from 6.4 meters of fluid depth. The combined settlement for the soils and the soil/bentonite layer is estimated to be about 2.7 centimeters. This amount of settlement is expected to have minimal impact on overall liner or basin stability (Chen-Northern 1991b). Settlement calculations are provided in *Calculations for Liquid Effluent Retention Facility Part B Permit Application* (HNF 1997).

The load bearing capacity of the foundation material, based on the soil analysis discussed previously, is estimated at about 48,800 kilograms per square meter [maximum advisable presumptive bearing capacity (Hough 1969)]. Anticipated static and dynamic loading from a full basin is estimated to be less than 9,000 kilograms per square meter (Section 4.5.2.1.3), which provides an ample factor of safety.

When the basins are empty, excess hydrostatic pressure in the foundation materials under the liner system theoretically could result in uplift and damage. However, because the native soil forming the foundations is unsaturated and relatively permeable, and because the water table is located at a considerable depth beneath the basins, any infiltration of surface water at the edge of the basin is expected to travel predominantly downward and away from the basins, rather than collecting under the excavation itself. No gas is expected in the foundation because gas-generating organic materials are not present.

Subsidence of undisturbed foundation materials is generally the result of fluid extraction (water or petroleum), mining, or karst topography. Neither petroleum, mineral resources, nor karst are believed to be present in the sediments overlying the Columbia River basalts. Potential groundwater resources do exist below the LERF. Even if these sediments were to consolidate from fluid withdrawal, their depth most likely would produce a broad, gently sloping area of subsidence that would not cause significant strains in the LERF liner system. Consequently, the potential for subsidence related failures is expected to be negligible.

Borings at the LERF site, and extensive additional borings in the 200 East Area, have not identified any significant quantities of soluble materials in the foundation soil or underlying sediments (Last et al. 1989). Consequently, the potential for sinkholes is considered negligible.

4.5.2.4 Liner System Exposure Prevention. Both primary and secondary geomembranes and the floating cover are stabilized with carbon black to prevent degradation from UV light. Furthermore, none of the liner layers experience long-term exposure to the elements. During construction, thin polyethylene sheeting was used to maintain optimum moisture content and provide protection from the wind for the soil/bentonite layer until the secondary geomembrane was laid in place. The secondary geomembrane was covered by the geonet and geotextile as soon as quality control testing was complete. Once the geotextile layer was completed, drainage material immediately was placed over the geotextile. The final (upper) geotextile layer was placed over the drainage gravel and immediately covered by the bentonite carpet liner. This was covered immediately, in turn, by the primary high-density polyethylene liner.

Both high-density polyethylene liners, geotextile layers, and geonet are anchored permanently to a concrete wall at the top of the basin berm. During construction, liners were held in place with many sandbags on both the basin bottoms and sideslopes to prevent wind from lifting and damaging the materials. Calculations were performed to determine the amount of fluid needed in a basin to prevent wind lift damage to the primary geomembrane.

Approximately 15 to 20 centimeters of solution are kept in each basin to minimize the potential for uplifting the primary liner (HNF 1997).

The entire lining system is covered by a very low-density polyethylene floating cover that is bolted to the concrete anchor wall. The floating cover prevents evaporation and intrusion from dust, precipitation, vegetation, animals, and birds. A patented tensioning system is employed to prevent wind from lifting the cover and to automatically accommodate changes in liquid level in the basins. The cover tension mechanism consists of a cable running from the flexible geosynthetic cover over a pulley on the tension tower (located on the concrete anchor wall) to a deadman anchor. These anchors (blocks) simply hang from the cables on the exterior side of the tension towers. The anchor wall also provides for solid attachment of the liner layers and the cover, using a 6.4-millimeter batten and neoprene gasket to bolt the layers to the concrete wall, effectively sealing the basin from the intrusion of light, precipitation, and airborne dust (Figure 4-15).

The floating cover, made of very low-density polyethylene with UV light inhibitors, is anticipated to experience no unacceptable degradation during the service life of the LERF. The very low-density polyethylene material contains carbon black for UV light protection, anti-oxidants to prevent heat degradation, and seaming enhancers to improve its ability to be welded. A typical manufacturer's limited warranty for weathering of very low-density polyethylene products is 20 years (Poly America, undated). This provides a margin of safety for the anticipated medium-term use of the LERF for aqueous waste storage.

The upper 3.4 to 4.6 meters of the sidewall liner also could experience stresses in response to temperature changes. Accommodation of thermal influences for the LERF geosynthetic layers is affected by inclusion of sufficient slack as the liners were installed. Calculations demonstrate that approximately 67 centimeters of slack is required in the long basin bottom dimension, 46 centimeters across the basin, and 34 centimeters from the bottom of the basin to the top of the basin wall (HNF 1997).

Thermal stresses also are experienced by the floating cover. As with the geomembranes, sufficient slack was included in the design to accommodate thermal contraction and expansion.

4.5.2.4.1 Liner Repairs During Operations. Should repair of a basin liner be required while the basin is in operation, the basin contents will be transferred to the ETF or another available basin. After the liner around the leaking section is cleaned, repairs to the geomembrane will be made by the application of a piece of high-density polyethylene sheeting, sufficient in size to extend approximately 8 to 15 centimeters beyond the damaged area, or as recommended by the vendor. A round or oval patch will be installed using the same type of equipment and criteria used for the initial field installations.

4.5.2.4.2 Control of Air Emissions. The floating covers limit evaporation of aqueous waste and releases of volatile organic compounds into the atmosphere. To accommodate volumetric changes in the air between the

fluid in the basin and the cover, and to avoid problems related to 'sealing' the basins too tightly, each basin is equipped with a carbon filter breather vent system. Any air escaping from the basins must pass through this vent, consisting of a pipe that penetrates the anchor wall and extends into a carbon adsorption filter unit.

4.5.2.5 Liner Coverage [650(2)(a)(i)(C)]. The liner system covers all of the ground surface that underlies the retention basins. The primary liner extends up the sideslopes to a concrete anchor wall at the top of the dike encircling the entire basin (Figure 4-15).

4.5.3 Prevention of Overtopping [806(4)(d)(ii)(B)]

Overtopping prevention is accomplished through administrative controls and liquid-level instrumentation installed in each basin. The instrumentation includes local liquid-level indication as well as remote indication at the ETF. Before an aqueous waste is transferred into a basin, administrative controls are implemented to ensure overtopping will not occur during the transfer. The volume of feed to be transferred is compared to the available volume in the receiving basin. The transfer is not initiated unless there is sufficient volume available in the receiving basin or a cut-off level is established. The transfer into the basin would be stopped when this cut-off level is reached.

In the event of a 100-year, 24-hour storm event, precipitation would accumulate on the basin covers. Through the self-tensioning design of the basin covers and maintenance of adequate freeboard, all accumulated precipitation would be contained on the covers and none would flow over the dikes or anchor walls. The 100-year, 24-hour storm is expected to deliver 5.3 centimeters of rain or approximately 61 centimeters of snow. Cover specifications include the requirement that the covers be able to withstand the load from this amount of precipitation. Because the cover floats on the surface of the fluid in the basin, the fluid itself provides the primary support for the weight of the accumulated precipitation. Through the cover self-tensioning mechanism, there is ample 'give' to accommodate the overlying load without overstressing the anchor and attachment points.

Rain water and snow evaporate readily from the cover, particularly in the arid Hanford Facility climate, where evaporation rates exceed precipitation rates for most months of the year. The black color of the cover further enhances evaporation. Thus, the floating cover prevents the intrusion of precipitation into the basin and provides for evaporation of accumulated rain or snow.

4.5.3.1 Freeboard. Under current operating conditions, 1.3 meters of freeboard is maintained at each LERF basin, which corresponds to an operating level of 6.1 meters, or 24.6 million liters.

4.5.3.2 Immediate Flow Shutoff. The mechanism for transferring aqueous waste is either through pump transfers with on/off switches or through gravity transfers with isolation valves. These methods provide positive ability to shut off transfers immediately in the event of overtopping. Overtopping a basin during a transfer is very unlikely because the low flow rates into the basin provides long response times. At a flow rate of 284 liters per minute, approximately 22 days would be required to fill a LERF basin from the 6.1 meter operating level (i.e., 1.3 meters of freeboard) to maximum capacity of 33 million liters (i.e., the 7.4-meter level).

4.5.3.3 Outflow Destination. Aqueous waste in the LERF is transferred routinely to ETF for treatment. However, should it be necessary to immediately empty a basin, the aqueous waste either would be transferred to the ETF for treatment or transferred to another basin (or basins), whichever is faster. If the waste is transferred to another LERF basin, the single pump for normal operation can be removed, and four submersible pumps can be installed using an emergency pump manifold. This portable piping and pumping system is capable of pumping 2,700 liters per minute. Not including set-up time, it would take approximately 7 days to pump the contents of a full basin at this pumping rate.

4.5.4 Structural Integrity of Dikes [806(4)(d)(ii)(C)]

Written certification attesting to the structural integrity of the dikes, signed by a qualified, registered professional engineer, is included in Appendix 4D.

4.5.4.1 Dike Design, Construction, and Maintenance [650(2)(f), (g), and (h)]. The dikes of the LERF are constructed of onsite native soils, generally consisting of cobbles and gravels. Well-graded mixtures were specified, with cobbles up to 15 centimeters in the largest dimension, but not constituting more than 20 percent of the volume of the fill. The dikes are designed with a 3:1 (3 units horizontal to 1 unit vertical) slope on the basin side, and 2.25:1 on the exterior side. The dikes are approximately 8.2 meters high from the bottom of the basin, and 3 meters abovegrade.

Calculations were performed to verify the structural integrity of the dikes (HNF 1997). The calculations demonstrate that the structural strength of the dikes is such that, without dependence on any lining system, the sides of the basins can withstand the pressure exerted by the maximum quantity of fluid in the impoundment. The dikes have a factor of safety greater than 3 against failure by sliding.

4.5.4.2 Dike Stability and Protection. In the following paragraphs, various aspects of stability for the LERF dikes and the concrete anchor wall are presented, including slope failure, hydrostatic pressure, and protection from the environment.

Failure in Dike/Impoundment Cut Slopes. A slope stability analysis was performed to determine the factor of safety against slope failure. The computer program 'PCSTABL5' from Purdue University, using the modified Janbu

Method, was employed to evaluate slope stability under both static and seismic loading cases. One hundred surfaces per run were generated and analyzed. The assumptions used were as follows (Chen-Northern 1991b):

- Weight of gravel: 2,160 kilograms per cubic meter
- Maximum dry density of gravel: 2,315 kilograms per cubic meter
- Mohr-Coulomb shear strength angle for gravel: minimum 33 degrees
- Weight of soil/bentonite: 1,600 kilograms per cubic meter
- Mohr-Coulomb shear strength angle for soil/bentonite: minimum 30 degrees
- Slope: 3 horizontal:1 vertical
- No fluid in impoundment (worst case for stability)
- Soils at in-place moisture (not saturated conditions).

Results of the static stability analysis showed that the dike slopes were stable with a minimum factor of safety of 1.77 (Chen-Northern 1991b).

The standard horizontal acceleration required in the *Hanford Plant Standards*, "Standard Architectural-Civil Design Criteria, Design Loads for Facilities" (DOE-RL 1988), for structures on the Hanford Site is 0.12 g. Adequate factors of safety for cut slopes in units of this type generally are considered to be 1.5 for static conditions and 1.1 for dynamic stability (Golder 1989). Results of the stability analysis showed that the LERF basin slopes were stable under horizontal accelerations of 0.10 and 0.15 g, with minimum factors of safety of 1.32 and 1.17, respectively (Chen-Northern 1991b). Printouts from the PCSTABL5 program are provided in *Calculations for Liquid Effluent Retention Facility Part B Permit Application* (HNF 1997).

Hydrostatic Pressure. Failure of the dikes due to buildup of hydrostatic pressure, caused by failure of the leachate system or liners, is very unlikely. The liner system is constructed with two essentially impermeable layers consisting of a synthetic layer overlying a soil layer with very low-hydraulic conductivity. It would require a catastrophic failure of both liners to cause hydrostatic pressures that could endanger dike integrity. Routine inspections of the leachate detection system, indicating quantities of leachate removed from the basins, provide an early warning of leakage or operational problems that could lead to excessive hydrostatic pressure. A significant precipitation event (e.g., a 100-year, 24-hour storm) will not create a hydrostatic problem because the interior sidewalls of the basins are covered completely by the liners. The covers can accommodate this volume of precipitation without overtopping the dike (Section 4.5.3), and the coarse nature of the dike and foundation materials on the exterior walls provides for rapid drainage of precipitation away from the basins.

Protection from Root Systems. Risk to structural integrity of the dikes as a result of penetrating root systems is minimal. Excavation and construction removed all vegetation on and around the impoundments, and native plants (such as sagebrush) grow very slowly. The large grain size of the cobbles and gravel used as dike construction material do not provide an advantageous germination medium for native plants. Should plants with extending roots become apparent on the dike walls, the plants will be controlled with appropriate herbicide application.

Protection from Burrowing Mammals. The cobble size materials that make up the dike construction material and the exposed nature of the dike sidewalls do not offer an advantageous habitat for burrowing mammals. Lack of vegetation on the LERF site discourages foraging. The risk to structural integrity of the dikes from burrowing mammals is therefore minimal. Periodic visual inspections of the dikes provide observations of any animals present. Should burrowing mammals be noted onsite, appropriate pest control methods such as trapping or application of rodenticides will be employed.

Protective Cover. Approximately 7.6 centimeters of crushed gravel serve as the cover of the exterior dike walls. This coarse material is inherently resistant to the effect of wind because of its large grain size. Total annual precipitation is low (16 centimeters) and a significant storm event (e.g., a 100-year, 24-hour storm) could result in about 5.3 centimeters of precipitation in a 24-hour period. The absorbent capacity of the soil exceeds this precipitation rate; therefore, the impact of wind and precipitation run-on to the exterior dike walls will be minimal.

4.5.5 Piping Systems

Aqueous waste 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 pipeline exits the 242-A Evaporator belowgrade and remains belowgrade 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 belowgrade is wrapped with electric heat tracing tape and insulated for protection from freezing.

The transfer line 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 carrier piping is centered and supported within 6-inch 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.

A catch basin is provided at the northwest corner of each basin where piping extend from the basin to allow for basin-to-basin and basin-to-ETF

liquid transfers. Drawings H-2-88766, sheets 1 through 4, in Appendix 4A, provide schematic diagrams of the piping system at LERF. Drawing H-2-79604, Appendix 4A, provides details of the piping from the 242-A Evaporator to LERF.

4.5.5.1 Secondary Containment System for Piping. The 6-inch containment piping encases the 3-inch carrier pipe from the 242-A Evaporator to the LERF. All of the piping and fittings that are not directly over a catch basin or a basin liner are of this pipe-within-a-pipe construction. A catch basin is provided at the northwest corner of each basin where the inlet pipes, leachate risers, and transfer pipe risers emerge from the basin. The catch basin consists of a 20-centimeter-thick concrete pad at the top of the dike. The perimeter of the catch basin has a 20-centimeter-high curb, and the concrete is coated with a chemical resistant epoxy sealant. The concrete pad is sloped so that any leaks or spills from the piping or pipe connections will drain into the basin. The catch basin provides an access point for inspecting, servicing, and operating various systems such as transfer valving, leachate level instrumentation and leachate pump. Drawing H-2-79593 (Appendix 4A) provides a schematic diagram of the catch basins.

4.5.5.2 Leak Detection System. Single-point electronic leak detection elements are installed along the transfer line at 305-meter intervals. The leak detection elements are located in the bottom of specially designed test risers. Each sensor element employs a conductivity sensor, which is connected to a cable leading back to the 242-A Evaporator control room. 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, the alarm sounds in the 242-A Evaporator control room and the zone of the leak is indicated on the digital display. The pump located in the 242-A Evaporator is shut down, stopping the flow of aqueous waste through the transfer line.

The catch basins have conductivity leak detectors that alarm in the 242-A Evaporator control room. Leaks into the catch basins drain back to the basin through a 5.1-centimeter drain on the floor of the catch basin.

4.5.5.3 Certification. Although an integrity assessment is not required for piping associated with surface impoundments, an assessment of the transfer liner was performed, including a hydrostatic leak/pressure test at 10.5 kilograms per square centimeter gauge. 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.

4.5.6 Double Liner and Leak Detection, Collection, and Removal System [806(4)(d)(ii)(D) and 650(2)(j)(iii)]

The double-liner system for LERF is discussed in Section 4.5.2. The leachate detection, collection, and removal system (Figures 4-17 and 4-18) was designed and constructed to remove leachate that might permeate the primary liner. System components for each basin include:

- 30.5-centimeter layer of drainage gravel below the primary liner at the bottom of the basin

- Geonet below the primary liner on the sidewalls to direct leachate to the gravel layer

- 3.0-meter by 1.8-meter by 0.30-meter-deep leachate collection sump consisting of a 25 millimeter high-density polyethylene flat stock, geotextile to trap large particles in the leachate, and 1.5-millimeter high-density polyethylene rub sheet set on the secondary liner

- 10-inch and 4-inch perforated leachate high-density polyethylene riser pipes from the leachate collection sump to the catch basin northwest of the basin

- Leachate collection sump level instrumentation installed in the 4-inch riser

- Level sensors, submersible leachate pump, and 1.5-inch fiberglass-reinforced epoxy thermoset resin pressure piping installed in the 10-inch riser

- Piping at the catch basin to route the leachate through 1.5-inch high-density polyethylene pipe back to the basins.

The bottom of the basins have a 2 percent slope to allow gravity flow of leachate to the leachate collection sump. This exceeds the minimum of 1 percent slope required by WAC 173-303-650(j) for new surface impoundments. Material specifications for the leachate collection system are given in Section 4.5.2.1.1.

Calculations demonstrate that fluid from a small hole (2 millimeter) (EPA 1989, p. 122) at the furthest end of the basin, under a low head situation, would travel to the sump in less than 24 hours (HNF 1997). Additional calculations in indicate the capacity of the pump to remove leachate is sufficient to allow time to readily identify a leak and activate emergency procedures (HNF 1997).

Automated controls maintain the fluid level in each leachate sump below 33 centimeters to prevent significant liquid backup into the drainage layer. The leachate pump is activated when the liquid level in the sump reaches about 28 centimeters, and is shut off when the sump liquid level reaches about 18 centimeters. This operation prevents the leachate pump from cycling with no fluid, which could damage the pump. Liquid level control is accomplished with conductivity probes that trigger relays selected specifically for application to submersible pumps and leachate fluids. A flowmeter/totalizer on the leachate return pipe measures fluid volumes pumped and pumping rate from the leachate collection sumps, and indicates volume and flow rate on local readouts. Other instrumentation provided is real-time continuous level monitoring with a readout at the catch basin and the 242-A Evaporator control room. A sampling port is provided in the leachate piping system at the catch basin. Leak detection is provided through inspections of the leachate flow

totalizer readings. For more information on inspections, refer to Chapter 6.0.

The stainless steel leachate pump is designed to deliver 110 liters per minute. The leachate pump returns draws liquid from the sump via 1.5-inch pipe and discharges into the basin through 1.5-inch high-density polyethylene pipe.

4.5.7 Construction Quality Assurance [806(4)(d)(ii)(F)]

The construction quality assurance plan and complete report of construction quality assurance inspection and testing results are provided in *242-A Evaporator Interim Retention Basin Construction Quality Assurance Plan* (KEH 1991). A general description of construction quality assurance procedures is outlined in the following paragraphs.

For excavation of the basins and construction of the dikes, regular inspections were conducted to ensure compliance with procedures and drawings, and compaction tests were performed on the dike soils.

For the soil/bentonite layer, test fills were first conducted in accordance with EPA guidance to demonstrate compaction procedures and to confirm compaction and permeability requirements can be met. The ratio of bentonite to soil and moisture content was monitored; lifts did not exceed 15 centimeters before compaction, and specific compaction procedures were followed. Laboratory and field tests of soil properties were performed for each lift and for the completed test fill. The same suite of tests was conducted for each lift during the laying of the soil/bentonite admixture in the basins.

Geotextiles and geomembranes were laid in accordance with detailed procedures and quality assurance programs provided by the manufacturers and installers. These included destructive and nondestructive tests on the geomembrane seams, and documentation of field test results and repairs.

4.5.8 Proposed Action Leakage Rate and Response Action Plan [806(4)(d)(ii)(G)]

An action leakage rate limit is established where action must be taken due to excessive leakage from the primary liner. The action leak rate is based on the maximum design flow rate the leak detection system can remove without the fluid head on the bottom liner exceeding 30 centimeters. The limiting factor in the leachate removal rate is the hydraulic conductivity of the drainage gravel. An action leakage rate (also called the rapid or large leak rate) of 20,000 liters per hectare per day was calculated for each basin (WHC 1992b).

When it is determined that the action leakage rate has been exceeded, the response action plan will follow the actions in WAC 173-303-650(11)(b) and (c), which includes notification of Ecology in writing within 7 days,

assessing possible causes of the leak, and determining whether waste receipt should be curtailed and/or the basin emptied.

4.5.9 Dike Structural Integrity Engineering Certification [806(4)(d)(v)]

Written certification attesting to the structural integrity of the dikes, signed by a qualified, registered professional engineer, is included in Appendix 4D.

4.5.10 Management of Ignitible, Reactive, or Incompatible Wastes [806(4)(d)(viii and ix)]

Although ignitible or reactive aqueous waste might be received in small quantities at LERF, such aqueous waste is with dilute solutions in the basins, removing the ignitable or reactive characteristics. For compatibility requirements with the LERF liner, refer to the waste analysis plan (Appendix 3A).

4.6 AIR EMISSIONS CONTROL [D-8 and D-8a]

This section addresses the ETF requirements of Air Emission Standards for Process Vents, under 40 CFR 264, Subpart AA (incorporated by reference in WAC 173-303-690) and Subpart CC. The requirements of 40 CFR 264, Subpart BB (WAC 173-303-691) are not applicable because aqueous waste with 10 percent or greater organic concentration would not be acceptable for processing at the ETF.

4.6.1 Applicability of Subpart AA Standards [D-8a(1)]

The ETF evaporator and thin film dryer perform operations that specifically require evaluation for applicability of WAC 173-303-690. Aqueous waste in these units routinely contains greater than 10 parts per million concentrations of organic compounds and are, therefore, subject to air emission requirements under WAC 173-303-690. Organic emissions from all affected process vents on the Hanford Facility must be less than 1.4 kilograms per hour and 2.8 megagrams per year, or control devices must be installed to reduce organic emissions by 95 percent.

The vessel offgas system provides a process vent system. This system provides a slight vacuum on the ETF process vessels and tanks (refer to Section 4.2.5.2). Two vessel vent header pipes combine and enter the vessel offgas system filter unit consisting of a demister, electric heater, prefilter, high-efficiency particulate air filters, activated carbon adsorber, and two exhaust fans (one fan in service while the other is backup). The vessel offgas system filter unit is located in the high-efficiency particulate air filter room west of the process area. The vessel offgas system exhaust discharges into the larger building ventilation system, with the exhaust fans

and stack located outside and immediately west of the ETF. The exhaust stack discharge point is 15.5 meters above ground level.

The annual average flow rate for the ETF stack (which is the combined vessel offgas and building exhaust flow rates) is provided in *Radionuclide Air Emissions Report for the Hanford Site - Calendar Year 1995* (DOE-RL 1996) as 220 cubic meters per minute with a total annual flow of approximately 1.2 E+08 cubic meters. During waste processing, the airflow through just the vessel offgas system is about 23 standard cubic meters per minute.

Organic emissions occur during waste processing, which occurs less than 310 days each year (i.e., 85 percent operating efficiency). This operating efficiency represents the maximum annual operating time for the ETF, as shutdowns are required during the year for planned maintenance outages and for reconfiguring the ETF to accommodate different aqueous waste.

4.6.2 Process Vents - Demonstrating Compliance [D-8a(2)]

This section outlines how the ETF complies with the requirements and includes a discussion of the basis for meeting the organic emissions limits, calculations demonstrating compliance, and conditions for re-evaluation.

4.6.2.1 Basis for Meeting Limits/Reductions [D-8a(2)(a)]. The 242-A Evaporator and the 200 Area ETF are currently the only operating TSD units that contribute to the Hanford Facility volatile organic emissions under 40 CFR 264, Subpart AA. The combined release rate is currently well below the threshold of 1.4 kilograms per hour or 2,800 kilograms per year of volatile organic compounds [General Information Portion (DOE/RL-91-28)]. As a result, the ETF meets these standards without the use of air pollution control devices.

The amount of organic emissions could change as waste streams are changed, or TSD units are brought online or are deactivated. The organic air emissions summation will be re-evaluated periodically as condition warrants. Operations of the TSD units operating under 40 CFR 264, Subpart AA, will be controlled to maintain Hanford Facility emissions below the threshold limits or pollution control device(s) will be added, as necessary, to achieve the reduction standards specified under 40 CFR 264, Subpart AA.

4.6.2.2 Demonstrating Compliance [D-8a(2)(b)]. Calculations to determine organic emissions are performed using the following assumptions:

- Maximum flow rate from LERF to ETF is 568 liters per minute.
- Emissions of organics from tanks and vessels upstream of the UV/OX process are determined from flow and transfer rates given in *Clean Air Act Requirements, WAC 173-400, As-built Documentation, Project C-018H, 242-A Evaporator/PUREX Plant Process Condensate Treatment Facility* (Adtechs 1995).

- UV/OX reaction rate constants and residence times are used to determine the amount of organics which are destroyed in the UV/OX process. These constants are given in *200 Area Effluent Treatment Facility Delisting Petition* (DOE/RL 1992).

- All organic compounds that are not destroyed in the UV/OX process are assumed to be emitted from the tanks and vessels into the vessel offgas system.

- No credit for removal of organic compounds in the vessel offgas system carbon adsorber unit is taken.

The calculation to determine organic emissions consists of the following steps:

1. Determine the quantity of organics emitted from the tanks or vessels upstream of the UV/OX process, using transfer rate values

2. Determine the concentration of organics in the waste after the UV/OX process using UV/OX reaction rates and residence times. If the ETF is configured such that the UV/OX process is not used, a residence time of zero is used in the calculations (i.e., none of the organics are destroyed)

3. Assuming all the remaining organics are emitted, determine the rate which the organics are emitted using the feed flow rate and the concentrations of organics after the UV/OX process

4. The amount of organics emitted from the vessel offgas system is the sum of the amount calculated in steps 1 and 3.

The organic emission rates and quantity of organics emitted during processing are determined using these calculations and are included in the ETF operating record.

4.6.2.3 Reevaluating Compliance with Subpart AA Standards [D-8a(2)(d)]. Calculations to determine compliance with Subpart AA will be reviewed when any of the following conditions occur at the ETF:

- Changes in the maximum feed rate to the ETF (i.e., greater than the 568 liters per minute flow rate)

- Changes in the configuration or operation of the ETF that would modify the assumptions given in Section 4.6.2.2 (e.g., taking credit for the carbon adsorbers as a control device)

- Annual operating time exceeds 310 days.

4.6.3 Applicability of Subpart CC Standards [D-8c]

The air emission standards of 40 CFR 264, Subpart CC apply to tank, surface impoundment, and container storage units that manage wastes with average volatile organic concentrations equal to or exceeding 500 parts per million by weight, based on the hazardous waste composition at the point of origination (61 FR 59972). However, TSD units that are used solely for management of mixed waste are exempt. Mixed waste is managed at the ETF and LERF and dangerous waste also could be treated and stored at these TSD units.

TSD owner/operators are not required to determine the concentration of volatile organic compounds in a hazardous waste if the wastes are placed in waste management units that employ air emission controls that are in compliance with the Subpart CC standards. Therefore, the approach to Subpart CC compliance at the ETF and LERF is to demonstrate that the ETF and LERF meet the Subpart CC control standards (40 CFR 264.1084 - 264.1086).

4.6.3.1 Demonstrating Compliance with Subpart CC for Tanks. Since the ETF tanks already have process vents regulated under 40 CFR 264, Subpart AA (WAC 173-303-690), they are exempt from Subpart CC [40 CFR 264.1080(b)(8)].

4.6.3.2 Demonstrating Compliance with Subpart CC for Containers. Container Level 1 and Level 2 standards are met at the ETF by managing all dangerous and/or mixed wastes in U.S. Department of Transportation containers [40 CFR 264.1086(f)]. Level 1 containers are those that store more than 0.1 cubic meters and less than or equal to 0.46 cubic meters. Level 2 containers are used to store more than 0.46 cubic meters of waste which are in "light material service". Light material service is defined where a waste in the container has one or more organic constituents with a vapor pressure greater than 0.3 kilopascals at 20°C, and the total concentration of such constituents is greater than or equal to 20 percent by weight.

The monitoring requirements for Level 1 and Level 2 containers include a visual inspection when the container is received at the ETF and when the waste is initially placed in the container. Additionally, at least once every 12 months when stored onsite for 1 year or more, these containers must be inspected.

If compliant containers are not used at the ETF, alternate container management practices are used that comply with the Level 1 standards. Specifically, the Level 1 standards allow for a "container equipped with a cover and closure devices that form a continuous barrier over the container openings such that when the cover and closure devices are secured in the closed position there are no visible holes, gaps, or other open spaces into the interior of the container. The cover may be a separate cover installed on the container...or may be an integral part of the container structural design...." [40 CFR 264.1086(c)(1)(ii)]. An organic-vapor-suppressing barrier, such as foam, may also be used [40 CFR 264.1086(c)(1)(iii)]. Section 4.3 provides detail on container management practices at the ETF.

Container Level 3 standards apply when a container is used for the "treatment of a hazardous waste by a waste stabilization process"

[40 CFR 264.1086(2)]. Because treatment in containers is not provided at the ETF, these standards do not apply.

4.6.3.3 Demonstrating Compliance with Subpart CC for Surface Impoundments. The Subpart CC emission standards are met at LERF through the use of a floating membrane cover that is constructed of very-low-density polyethylene that forms a continuous barrier over the entire surface area [40 CFR 264.1085(c)]. This membrane has both organic permeability properties equivalent to a high-density polyethylene cover and chemical/physical properties that maintain the material integrity for the intended service life of the material. The additional requirements for the floating cover at the LERF have been met (Section 4.5.2.4).

This page intentionally left blank.

Table 4-1. 200 Area Effluent Treatment Facility Tank Systems Information.
(sheet 1 of 2)

Tank Description	Material of Construction	Maximum Tank Capacity[1] liters	Inner diameter meters	Height meters	Shell Thickness[2] centimeters	Corrosion Protection[3]
Load-in tanks (2)	304 SS	37,900	3.6	4.7	0.64	Type 304 SS
Surge tank	304 SS	461,820	7.9	9.2	0.48	Type 304 SS
pH adjustment tank	304 SS	16,660	3.0	2.5	0.64	Type 304 SS
First RO feed tank	304 SS	20,440	3.0	3.2	0.64	Type 304 SS
Second RO feed tank	304 SS	7,600	Nonround tank 3.0 m x 1.5 m	1.5	0.48 w/rib stiffeners	Type 304 SS
Effluent pH adjustment tank	304 SS	14,390	2.4	3.6	0.64	Type 304 SS
Verification tanks (3)	Carbon steel with epoxy lining	2,763,340	18.3	11.4	0.79	epoxy coating
Secondary waste receiving tanks (2)	304 SS	75,700	4.3	5.7	0.64	Type 304 SS
Concentrate tanks (2)	316L SS	24,980	3.0	3.8	0.64	Type 316 SS
ETF evaporator (Vapor Body)	Alloy 625	20,800	2.4	6.8	variable	Alloy 625
Distillate flash tank	304 SS	950	Horizontal tank 0.76	Length 2.2	0.7	304 SS
Sump tank 1	304 SS	4,160	1.5 x 1.5	3.4	3/16	304 SS
Sump tank 2	304 SS	4,160	1.5 x 1.5	3.4	3/16	304 SS

Table 4-1. 200 Area Effluent Treatment Facility Tank Systems Information. (sheet 2 of 2)

Tank description	Liner materials	Pressure controls	Foundation materials	Structural support	Seams	Connections
Load-in tanks (2)	None	vent to atmosphere	concrete slab	SS skirt bolted to concrete	welded	flanged
Surge tank	None	pressure indicator/vacuum breaker valve	reinforced concrete ring plus concrete slab	structural steel on concrete base	welded	flanged
pH adjustment tank	None	pressure indicator/vent to VOG	concrete slab	carbon steel skirt	welded	flanged
First RO feed tank	None	pressure indicator/vent to VOG	concrete slab	carbon steel skirt	welded	flanged
Second RO feed tank	None	pressure indicator/vent to VOG	concrete slab	carbon steel frame	welded	flanged
Effluent pH adjustment tank	None	pressure indicator/vent to VOG	concrete slab	carbon steel skirt	welded	flanged
Verification tanks (3)	Epoxy	pressure indicator/filtered vent to atmosphere	reinforced concrete ring plus concrete slab	structural steel on concrete base	welded	flanged
Secondary waste receiving tanks (2)	None	pressure indicator/vent to VOG	concrete slab	carbon steel skirt	welded	flanged
Concentrate tanks (2)	None	pressure indicator/vent to VOG	concrete slab	carbon steel skirt	welded	flanged
ETF evaporator (vapor body)	None	pressure indicator/vapor vent - to DFT/VOG	concrete slab	carbon steel frame	welded	flanged
Distillate flash tank	None	vent to VOG	concrete slab	carbon steel I-beam and cradle	welded	flanged
Sump tank 1	None	vent to VOG	concrete containment	reinforced concrete containment basin	welded	flanged
Sump tank 2	None	vent to VOG	concrete containment	reinforced concrete containment basin	welded	flanged

[1] The maximum operating volume of the tanks is identified. For the load-in tanks and the second RO feed tank, the maximum operating volume is also the operating capacity.
[2] The nominal thickness of ETF tanks is represented.
[3] Type 304 SS, 304L, 316 SS and alloy 625 provide corrosion protection.

304 SS = stainless steel type 304 or 304L.
316L SS = stainless steel type 316L.
DFT = distillate flash tank.
VOG = vessel offgas system.

980320.1430

Table 4-2. Ancillary Equipment and Material Data. (sheet 1 of 2)

System	Ancillary equipment	Number	Material
Load-in tanks	Load-in/transfer pumps (2)	P-103A/-103B	316 SS
Surge tank	Surge tank pumps (3)	2025E-60A-P-1A/-1B/-1C	304 SS
Rough filter	Rough filter	2025E-60B-FL-1	304 SS
UV/OX	UV oxidation inlet cooler	2025E-60B-E-1	316 SS
	UV oxidizers (4)	2025E-60D-UV-1A/-1B/-2A/-2B	316 SS
pH adjustment	pH adjustment pumps (2)	2025E-60C-P-1A/-1B	304 SS
Peroxide decomposer	H_2O_2 decomposers (2)	2025E-60D-CO-1A/-1B	CS with epoxy coating
Fine filter	Fine filter	2025E-60B-FL-2	304 SS
Degasification	Degasification column inlet cooler	2025E-60E-E-1	316 SS
	Degasification column	2025E-60E-CO-1	FRP
	Degasification pumps (2)	2025E-60E-P-1A/-1B	316 SS
RO	Feed/booster pumps (6)	2025E-60F-P-1A/-1B/-2A/-2B/-3A/-3B	304 SS
	Reverse osmosis arrays (21)	2025E-60F-RO-01 through -21	Membranes: polyamide Outer piping: 304 SS
IX/Polishers	Polishers (3)	2025E-60G-IX-1A/-1B-1C	CS with epoxy coating
	Resins strainers (3)	2025E-60G-S-1A/-1B/-1C	304 SS
Effluent pH adjustment	Recirculation/transfer pumps (2)	2025E-60C-P-2A/-2B	304 SS/PVC
Verification tanks	Return pump	2025E-60H-P-1	304 SS
	Transfer pumps (2)	2025E-60H-P-2A/-2B	
Secondary waste receiving tanks	Secondary waste feed pumps (2)	2025E-60I-P-1A/-1B	304 SS

T4-2.1

Table 4-2. Ancillary Equipment and Material Data. (sheet 2 of 2)

System	Ancillary equipment	Number	Material
ETF evaporator system	Feed/distillate heat exchanger	2025E-601-E-02	Tubes: 316 SS Shell: 304 SS
	Heater (reboiler)	2025E-601-E-01	Tubes: alloy 625 Shell: 304 SS
	Recirculation pump	2025E-601-P-02	316 SS
	Concentrate transfer pump	2025E-601-P-04	316 SS
	Entrainment separator	2025E-601-DE-01	Top section: 316 SS Bottom section: alloy 625
	Vapor compressor (incl. silencers)	2025E-601-C-01	304 SS
	Silencer drain pump	2025E-601-P-06	316 SS
	Level control tank	2025E-601-TK-5	304 SS
	Distillate flash tank pump	2025E-601-P-03	316 SS
Concentrate tanks	Concentrate circulation pumps (2)	2025E-60J-P-1A/-1B	316 SS
Thin film dryer	Concentrate feed pump	2025E-60J-P-2	316 SS
	Dryer feed preheater	2025E-60J-E-3	316 SS
	Thin film dryer	2025E-60J-D-1	Interior surfaces: alloy 625 Rotor and blades: 316 SS
	Powder hopper	2025E-60J-H-1	316 SS
	Spray condenser	2025E-60J-DE-01	316 SS
	Distillate condenser	2025E-60J-CND-01	Tubes: 304 SS Shell: CS
	Dryer distillate pump	2025E-60J-P-3	316 SS
Resin dewatering	Dewatering pump	2025E-80E-P-1	

CS = carbon steel.
FRP = fiberglass reinforced plastic.
PVC = polyvinyl chloride.
RO = reverse osmosis.
UV = ultraviolet.
304 SS = stainless steel type 304 or 304L.
316 SS = stainless steel type 316 or 316L.

Table 4-3. Concrete and Masonry Coatings.

Coating	Minimum wet film thickness (mil)	Percentage of film forming solids per volume (%)	Minimum dry film thickness (mil)
Concrete and masonry			
Prime: Amercoat-187*	4.5	22.0	1.0
Second: Amercoat-33	6.4	23.46	1.5
Finish: Amercoat-33	6.4	23.46	1.5
or			
Prime: Amercoat-385	5-6	66	3-4
Topcoat: Amercoat-450HS	3-4	66	2-2.5
High traffic, container storage area			
Filler: Ameron Nu-Klad 114A**	--	100	--
Prime: Amercoat-105A	2-3	100	2-3
Topcoat: Amercoat-120	20-30	100	20-30

*Amercoat is a trademark of Ameron, Incorporation.
**Nu-Klad is a trademark of Ameron, Incorporation.

Table 4-4. Geomembrane Material Specifications.

Property	Value
Specific gravity	0.932 to 0.950
Melt flow index	1.0 g/10 min., maximum
Thickness (thickness of flow marks shall not exceed 200% of the nominal liner thickness)	60 mil ± 10% (1.5 mm ± 10%)
Carbon black content	1.8 to 3%, bottom liner 2 to 3%, top liner
Tensile properties (each direction)	
Tensile strength at yield	21.5 kgf/cm width, minimum
Tensile strength at break	32.2 kgf/cm width, minimum
Elongation at yield	10%, minimum
Elongation at break	500%, minimum
Tear resistance	13.6 kgf, minimum
Puncture resistance	31.3 kgf, minimum
Low temperature/brittleness	-40 °C, maximum
Dimensional stability (% change each direction)	±2%, maximum
Environmental stress crack	750 h, minimum
Water absorption	0.1 maximum and weight change
Hydrostatic resistance	316,000 kgf/m^2
Oxidation induction time (200 °C/1 atm. O_2)	90 min, minutes

Reference: Construction Specifications (KEH 1990b). Format uses NSF 54 table for high-density polyethylene as a guide (NSF 1985). However, RCRA values for dimensional stability and environmental stress crack have been added.

% = percent
g = gram
min = minute
h = hour
max = maximum
kgf = kilograms force
m = meters
mm = millimeters

Table 4-5. Drainage Gravel Specifications.

Property	Value
Sieve size	
25 millimeters	100 wt% passing
19 millimeters	80 - 100 wt% passing
9.5 millimeters	10 - 40 wt% passing
4.75 millimeters	0 - 4 wt% passing
Permeability	0.1 cm/sec, minimum

Reference: Sieve size is from WSDOT M41-10-88, Section 9.03.1(3)C for Grading No. 5 (WSDOT 1988). Permeability requirement is from WAC 173-303-650(2)(j) for new surface impoundments.

This page intentionally left blank.

Key components of the ETF inspection program include the following areas:

- Condition of tanks and ancillary piping
- Condition of containers
- Condition of the process control equipment
- Condition of emergency equipment
- Condition of secondary containment.

Tables 6-1 and 6-2 provide a description of ETF items to be inspected.

6.2.1.2 Frequency of Inspections [F-2a(3)]. The frequency of inspections is based on the rate of possible deterioration of equipment and the probability of a threat to human health or the environment.

While in operation, the LERF is inspected weekly. The LERF also is inspected for run-on, run-off, cover integrity, and erosion problems after significant precipitation events. The ETF is inspected as indicated in Tables 6-1 and 6-2.

6.2.2 Specific Process Inspection Requirements [F-2d].

The following sections describe the specific process inspections performed at LERF and ETF.

6.2.2.1 Container Inspections [F-2d(1)]. Containers are used at the ETF to store solidified secondary waste, such as the powder waste from the thin film dryer and maintenance and operations waste. When containers are being held in the container storage area, the following inspection schedule is maintained:

- Daily visual inspection of container storage area for leaks, spills, accumulated liquids, and open or improperly sealed containers
- Weekly visual inspection of container labels to ensure labels are not obscured, removed, or otherwise unreadable
- Weekly visual inspection for deterioration of containers, containment systems, or cracks in protective coating or foundations caused by corrosion, mishandling, or other factors.

Following the inspections, an inspection datasheet is signed and dated by the inspector and supervisor.

6.2.2.2 Tank Inspections [F-2d(2)]. A description of the tank systems and ancillary equipment at the ETF is given in Chapter 4.0. Inspections and frequencies are given in Tables 6-1 and 6-2. This section includes a brief discussion of the inspections.

6.2.2.2.1 Overfill Protection. Tanks that have the possibility of being overfilled have level instrumentation that alarms before the tanks reach overflow. High tank level alarms annunciate in the control room, allowing operating personnel to take immediate action to stop the vessels from

overfilling. These alarms are monitored continuously in the control room during solution transfers.

6.2.2.2.2 Visual Inspections. Visual inspections of tanks and secondary containments are performed to check for leaks, signs of corrosion or damage, and malfunctioning equipment. Inspections are performed on tanks and the secondary containment within the ETF and the surge tank and verification tank and associated secondary containment.

6.2.2.2.3 Secondary Containment Leak Detectors. The surge tank and verification tank secondary containment systems have sloped floors that drain solution to sumps equipped with leak detectors that alarms in the control room. These alarms are monitored continuously in the control room. If an alarm is activated, further investigation is performed to determine if the source is a tank leak or other solution (i.e., precipitation).

6.2.2.2.4 Integrity Assessments. The initial integrity assessment was issued in 1995 (Chapter 4.0). Consistent with the recommendations of the integrity assessment, a periodic integrity assessment program was developed for the ETF tanks and is discussed in detail in section 4.4.2 of Chapter 4.0.

6.2.2.2.5 Effluent Treatment Facility Piping. The ETF employs an extensive piping system. During inspections at the ETF, any aboveground piping is inspected visually for signs of leakage and for general structural integrity. During the visual inspection, particular attention is paid to valves and fittings for signs of cracking, deformation, and leakage.

6.2.2.3 Surface Impoundments [F-2d(6)] and Condition Assessment [F-2d(6)(a)]. The following describes the surface impoundment inspections performed at LERF.

6.2.2.3.1 Overtopping Control [F-2d(6)(a)(1)]. Under current operating conditions, 1.34 meters of freeboard is maintained at each LERF basin, which corresponds to a normal operating level of 6.1 meters, or 24.6 million liters. Level indicators at each basin are monitored to confirm that this level is not exceeded.

Before an aqueous waste is transferred into a basin, administrative controls are implemented to ensure overtopping will not occur during the transfer. The volume of feed to be transferred is compared to the available volume in the receiving basin. The transfer is not initiated unless there is sufficient volume available in the receiving basin or a cut-off level is established. The transfer into the basin would be stopped when this cut-off level is reached.

The LERF basins also are provided with floating very low-density polyethylene covers that are designed and constructed to prevent overtopping by the introduction of precipitation and dust into the basins. Overtopping and flow control also are discussed in Chapter 4.0.

6.2.2.3.2 Impoundment Contents [F-2d(6)(a)(2)]. The LERF basins are inspected weekly to assess whether the contents are escaping from a basin.

Table 6-1. Visual Inspection Schedule for the ETF.
(sheet 3 of 3)

Item	Inspection	Frequency	Inspected by
Support Systems			
Vessel ventilation system	Inspect filters (HEPA and pre-filters), check vessel off-gas pressures, system flow, and discharge temperatures.	Daily	Process operator
Sump tank system	Inspect sump trenches for leaks, spillage, and proper levels.	Daily	Process operator
Safety Systems			
Eye wash stations	Check status; check for adequate pressure.	Monthly	Process operator
Safety showers	Check status; check for adequate pressure.	Monthly	Process operator
Emergency Systems			
Fire extinguishers	Check for adequate charge.	Monthly	Process operator
Emergency lighting	Test operability.	Monthly	Process operator
Processing Area			
Uninterruptible power supply	Check output voltage and visually inspect battery pack for corrosion and leakage. Check indicator lights for fault conditions.	Annually	Electrician/ process operator

* Stated inspection frequency to be performed only during ETF operations.

HEPA - High efficiency particulate air

Table 6-2. Inspection Plan for Instrumentation Monitoring. (sheet 1 of 2)

Item	Inspection	Frequency	Inspected by
Main Treatment Train			
Leak detector LAH-20B009	Monitor for leakage in the surge tank drainage sump.	Continuously	Computer Process Operator
Level alarm LAH-60A013	Monitor surge tank level to prevent overflow.	Continuously	Computer Process Operator
Level alarm LAHL-60C-111	Monitor liquid levels in the pH adjustment tank to prevent overflow.	Continuously	Computer Process Operator
Level alarm LAHL-60F-101	Monitor liquid levels in the first RO feed tank to prevent overflow.	Continuously	Computer Process Operator
Level alarm LAHL-60F-201	Monitor liquid levels in the second RO feed tank to prevent overflow.	Continuously	Computer Process Operator
Level alarms LAHL-60F-211	Monitor liquid levels in the effluent pH adjustment tank to prevent overflow.	Continuously	Computer Process Operator
Level transmitter LAHX-60H001A/B/C	Monitor liquid level in verification tanks to prevent overflow.	Continuously	Computer Process Operator
Leak detector LAH-20B010	Monitor for leakage in the verification tank drainage sump.	Continuously	Computer Process Operator
Secondary Treatment Train			
Level alarm LAHL-60I-001A/B	Monitor liquid levels in secondary waste receiver tanks A and B to prevent overflow.	Continuously	Computer Process Operator
Level alarm LAHL-60J-001A/B	Monitor liquid levels in concentrate tanks A and B to prevent overflow.	Continuously	Computer Process Operator
Level alarm LAHL-60I-107	Monitor liquid levels in the evaporator tank to prevent overflow.	Continuously	Computer Process Operator
Level alarm LAHL-60J-036	Monitor liquid levels in the spray condenser tank to prevent overflow.	Continuously	Computer Process Operator