1223820

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

14-ESQ-0071

APR 0 9 2014

Ms. S. L. Dahl-Crumpler
Nuclear Waste Program
State of Washington
Department of Ecology
3100 Port of Benton Boulevard
Richland, Washington 99354

Dear Ms. Dahl-Crumpler:

CLASS 1 MODIFICATIONS TO THE HANFORD FACILITY RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) PERMIT, QUARTER ENDING MARCH 31, 2014

In accordance with Hanford Facility RCRA Permit Condition I.C.3, enclosed for your notification are the Class 1 modifications for the quarter ending March 31, 2014.

These modifications update information in Part III of Permit Revision 8C. The modifications pertain to the Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility, the 242-A Evaporator, and the Waste Treatment and Immobilization Plant. The Class 1 modifications are being made to ensure that activities are conducted in compliance with the Permit. A record of the enclosed documentation is maintained in the Hanford Facility Operating Record.

If you have any questions, please contact me, or your staff may contact Stacy L. Charboneau, Assistant Manager for Safety and Environment, on (509) 373-3841.

Sincerely,

Matt McCormick
Manager

ESQ:ACM

Enclosure

cc w/encl: See page 2

RECEIVED
APR 1 5 2014
EDMC

cc w/encl:
B. A. Harkins, ORP (CD ROM)
Ecology NWP Library (Hardcopy)
Environmental Portal, LMSI, A3-95 (CD ROM)
Administrative Record, TSD: H-0-1, H-0-8, S-2-8, T-2-6, H6-08 (Hard Copy & CD ROM)
HF Operating Record (J. K. Perry, MSA, H7-28) (CD ROM)

cc w/o encl:
B. M. Barnes, CHPRC
A. S. Carlson, Ecology
B. L. Curn, URS
J. A. Hedges, Ecology
J. A. Joyner, WRPS
D. L. McDonald, Ecology
A. G. Miskho, WRPS
A. L. Prignano, Ecology
J. R. Seaver, CHPRC
E. R. Skinnarland, Ecology
M. B. Wilson, MSA

ENCLOSURE

CLASS 1 MODIFICATIONS FOR QUARTER ENDING March 31, 2014
Ms. S. L. Dahl-Crumpler, Ecology

Consisting of 113 pages,
including this cover page

Hanford Facility RCRA Permit Modification Notification Forms

Part III, Operating Unit 3

Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility

Index

Page 2 of 6 Hanford Facility RCRA Permit III.3 Conditions

Page 3 of 6 Addendum A, Part A Form, Section X

Page 4 of 6 Addendum A, Part A Form, Section XII

Page 5 of 6 Addendum A, Part A Form, Comments Section

Page 6 of 6 Addendum I, Table I.1

Submitted by Co-Operator: _____ 3/25/2014 Date

Reviewed by RL Program Office: _____ 3/26/14 Date

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	**Part III, Operating Unit 3**

Description of Modification:
Hanford Facility RCRA Permit III.3:

PART III, OPERATING UNIT GROUP 3 PERMIT CONDITIONS

Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility

Unit Description:

The Liquid Effluent Retention Facility (LERF) and 200 Area Effluent Treatment Facility(200 Area ETF) consists of an aqueous waste treatment system that provides treatment, storage integral to the treatment process, and storage of secondary wastes from the treatment process for a variety of aqueous mixed waste. The 200 Area ETF is located in the 200 East Area. Aqueous wastes managed by the 200 Area ETF include process condensate from the LERF and 200 Area ETF 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 200 Area ETF for treatment in a series of process units, or systems, that remove or destroy essentially all of the dangerous waste constituents. 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 2000) and 200 Area ETF Delisting (40 CFR 261, Appendix IX, Table 2). Construction of the LERF began in 1990. Waste management operations began at LERF in April 1994. Construction of the 200 Area ETF began in 1992. Waste management operations began at 200 Area ETF in November of 1995.

This Chapter provides unit-specific Permit conditions applicable to the dangerous waste management units for LERF and 200 Area ETF.

List of Addenda Specific to Operating Unit Group 3

Addendum A	Part A Form, dated March 31, 2014 ~~June 20, 2013~~
Addendum B	Waste Analysis Plan, dated March 31, 2013
Addendum C	Process Information, dated September 30, 2103
Chapter 5.0	Groundwater Monitoring (PNNL-11620 & WHC-SD-EN-AP-024), dated June 30, 2008
Addendum E	Security Requirements, dated, June 30, 2011
Addendum F	Preparedness and Prevention, dated June 20, 2013
Addendum G	Personnel Training, dated June 30, 2012
Addendum H	Closure Plan, dated June 30, 2011
Addendum I	Inspection Requirements, dated March 31, 2014 ~~September 30, 2013~~
Addendum J	Contingency Plan, dated March 31, 2012

WAC 173-303-830 Modification Class [1] [2]	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1
Enter wording of WAC 173-303-830, Appendix I Modification citation:
Administrative and informational changes.

Modification Approved: ☑ Yes ☐ No (state reason for denial)
Reason for denial:

Reviewed by Ecology:
S. L. Dahl-Crumpler 3-19-14 Date

[1] Class 1 modifications requiring prior Agency approval.

[2] 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 a Class 1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	**Part III, Operating Unit 3**

Description of Modification:
Addendum A, Part A Form:

X. Other Environmental Permits (see instructions)

A. Permit Type	B. Permit Number	C. Description
E	TSCA03-10-22	TSCA approval, 40 CFR 761
E	WCM-127	40 CFR 761.61(c), TSCA risk-based approval 2003-10-22
E	~~AN~~ ~~OO~~ ~~PC~~ ~~0-9~~ ~~03~~ ~~--~~ ~~03~~ 5 - 0 0 6	Title V Air Operating Permit~~WAC 173-400, General Regulations for Air Pollution Sources/ WAC 173-460, Controls for New Sources of Toxic Air Pollutants~~
E	~~DN~~ ~~EO~~ ~~0C~~ ~~7-9~~ ~~N6~~ ~~WN~~ ~~PW~~ ~~--1~~ 0- 03 30 ~~1~~	WAC 173-400 & -460 Criteria & Toxics approval~~WAC 173-400, General Regulations for Air Pollution Sources/ WAC 173-460, Controls for New Sources of Toxic Air Pollutants~~
E	~~FA~~ ~~FI~~ ~~-R~~ ~~0-0~~ 14 ~~--~~ ~~11~~ 40 ~~61~~	WAC 246-247 Radioactive Air Emissions approval, LERF Basin 44, EU 146, AIR 12-305~~WAC 246-247, Radiation Protection – Air Emissions~~
E	FF-01-147	WAC 246-247 Radioactive Air Emissions approval, LERF Basin 43, EU 147, AIR 12-305
E	FF-01-148	WAC 246-247 Radioactive Air Emissions approval, LERF Basin 42, EU 148, AIR 12-305
E	FF-01-301	WAC 246-247 Radioactive Air Emissions approval, ETF, EU 301, AIR 12-305
U	ST 4500	WAC 173-216, State Waste Discharge Permit ~~Program, Sitewide Permit for miscellaneous streams~~ for the 200 Area Effluent Treatment Facility State-Approved Land Disposal Site
U	ST 4511	WAC 173-216, State Waste Discharge Permit Program, Sitewide Permit for miscellaneous streams

WAC 173-303-830 Modification Class [1 2]	Class 1	Class [1]1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1

Enter wording of WAC 173-303-830, Appendix I Modification citation: Administrative and informational changes. This section was revised to delete permits that have expired and add new permits in accordance with the Part A Form instructions.

Modification Approved: ☑ Yes ☐ No (state reason for denial)

Reason for denial:

Reviewed by Ecology:

S. L. Dahl-Crumpler — Date: 3-19-14

[1] Class 1 modifications requiring prior Agency approval.

[2] 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 a Class [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	**Part III, Operating Unit 3**

Description of Modification:
Addendum A, Part A Form:

Section XII. Process Codes and Design Capacities

Line Number		A. Process Codes (enter code)			B. Process Design Capacity 1. Amount	B. Process Design Capacity 2. Unit of Measure (enter code)	C. Process Total Number of Units
X	1	S	0	2	1,600	G	002
X	2	T	0	3	20	E	001
X	3	T	0	4	700	C	001
	1	S	0	4	88,500,000	L	003
	2	T	0	2	88,500,000	V	003
	3	S	0	2	9,849,350	L	019
	4	T	0	1	817,646	V	019~~017~~
	5	S	0	1	147,630	L	003
	6	T	0	4	18,927	V	001

Section XIII. Other Process Codes

Line Number		A. Process Codes (enter code)			B. Process Design Capacity 1. Amount	B. Process Design Capacity 2. Unit of Measure (enter code)	C. Process Total Number of Units	D. Process Description
X	1	T	0	4	700	C	001	In situ vitrification
	1	T	0	4	18,927	V	001	container treatment
	2							
	3							
	4							
	5							
	6							

WAC 173-303-830 Modification Class [1 2]	Class 1	Class [1]1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.2

Enter wording of WAC 173-303-830, Appendix I Modification citation: Correction of typographical errors. This is to correct a typographical error that occurred when processing an unrelated change to the part A form. The change to '19' for the 'Process Total Number of Units' was approved by Ecology in Rev 2 of the Part A on 6/8/11 (11-NWP-057). The change was dropped in error during a more recent and unrelated Part A permit revision to Rev 2A, approved by Ecology on 8/20/12 (12-NWP-139).

Modification Approved: [✓] Yes [ ] No (state reason for denial)

Reason for denial:

Reviewed by Ecology:

S. L. Dahl-Crumpler — Date: 3-19-14

[1] Class 1 modifications requiring prior Agency approval.

[2] 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 a Class [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	**Part III, Operating Unit 3**

Description of Modification:
Addendum A, Part A Form:

Comments

Section XII. Process Codes and Design Capacities – B.1 (6/20/2013):~~.~~ Amount, changed 7,608,654 L to 9,849,350 L for S02.

Section XIV. Description of Dangerous Waste – B (6/20/2013):~~.~~ Estimated Annual Quantity of Waste, changed 88,497,000 K to 106,940,410 K for S04T02 on line numbers 1 through 35; 298,434,296 K to 106,940,410 K for T01 on line numbers 36 through 70; 30,433,326 K to 106,940,410 K for S02 on line numbers 71 through 105; and 1,986,735 K to 153,932 K for S01 on line numbers 106 through 140.

Section XVIII. Certifications – for Co-Operator (6/20/2013): "John G. Lehew III" to "John C. Fulton".

Photographs (6/20/2013)~~.~~: Added photograph of LERF and 200 Area ETF.

Revision Number (3/31/2014): Change from 3 to 3A

Section X. Other Environmental Permits (Deleted) (3/31/2014):
- NOC-93-3, WAC 173-400, General Regulations for Air Pollution Sources / WAC 173-460 Controls for New Sources of Toxic Air Pollutants
- NOC-96NW-1-301, WAV 173-400, General Regulations for Air Pollution Sources / WAC 173-460 Controls for New Sources of Toxic Air Pollutants
- AIR-04-101 – WAC 246-247, Radiation Protection – Air Emissions

Section X. Other Environmental Permits (Added) (3/31/2014):
- AOP 00-05-006, Title V Air Operating Permit
- DE07NWP-003, WAC 173-400 & 460 Criteria & Toxics approval
- FF-01-146, WAC 246-247, Radioactive Air Emissions Approval, LERF Basin 44, EU 146, AIR 12-305
- FF-01-147, WAC 246-247, Radioactive Air Emissions Approval, LERF Basin 43, EU 147, AIR 12-305
- FF-01-148, WAC 246-247, Radioactive Air Emissions Approval, LERF Basin 42, EU 148, AIR 12-305
- FF-01-301, WAC 246-247, Radioactive Air Emissions Approval, ETF, EU 301, AIR 12-305

Section X. Other Environmental Permits (3/31/2014): Changed the Permit ST 4500 title:
Deleted: *WAC 173-216, State Waste Discharge Permit Program, Sitewide Permit for miscellaneous streams;* and inserted: *WAC 173-216, State Waste Discharge Permit for the 200 Area Effluent Treatment Facility State-Approved Land Disposal Site.*

Section XII. Process Codes and Design Capacities – C Process Total Number of Units (3/31/2014): Changed 17 to 19 for T01

WAC 173-303-830 Modification Class [1,2]	Class 1	Class [1]1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1
Enter wording of WAC 173-303-830, Appendix I Modification citation: Administrative and informational changes. This section was revised to identify changes associated with the 3/31/2014 Class 1 permit modification and to add dates for prior permit changes.

Modification Approved: [X] Yes [ ] No (state reason for denial)
Reason for denial:

Reviewed by Ecology:
S. L. Dahl-Clumpler 3-19-14
Date

[1] Class 1 modifications requiring prior Agency approval.
[2] 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 a Class [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	**Part III, Operating Unit 3**

Description of Modification:

Addendum I, Table I.1. Visual Inspection Schedule for the LERF and 200 Area ETF:

Item	Inspection	Frequency
	.....LERF (Surface Impoundment)	
LERF basins and dikes	Check to overtopping controls and integrity of the basins and dikes	Weekly
LERF contents	Check basin level indicators for unaccountable changes in the level of the basins	Weekly
~~LERF contents~~ Leak Detections	Determine the leak rate per wetted surface area	Weekly
LERF basins and dikes	Check for run-on, run-off, cover integrity, ~~and~~ erosion problems, and other signs of deterioration	~~Daily~~ Weekly & ~~A~~after significant precipitation events
	Ignitable and Reactive.....	

WAC 173-303-830 Modification Class [1 2]	Class 1	Class [1]1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1 and A.2

Enter wording of WAC 173-303-830, Appendix I Modification citation: Administrative and informational changes and correction of typographical errors.

Change in inspection frequency for LERF basins from Daily to Weekly: This is a Correction of a Typo. WAC 173-303-650(4)(b) states, in part, that while a surface impoundment is in operation, it must be inspected weekly and after storms to detect severe erosion or other signs of deterioration in dikes or other containment devices. Section I.1.2.3.4 in the current LERF/ETF dangerous waste permit indicates that these inspections are performed weekly. Table I.1 is being modified to be consistent with Section I.1.2.3.4.

The previous version (2007) of the LERF/ETF portion of the dangerous waste permit contained the following:

- Section 6.2.1.2 stated that while in operation, the LERF is inspected weekly and it is also inspected for run-on, run-off, cover integrity, and erosion problems after significant precipitation events.
- Section 6.2.2.3.4 stated that the LERF basins and dikes are visually inspected weekly and after storms for severe erosion or other signs of deterioration in the dikes from precipitation, wind, burrowing mammals, or vegetation.
- Section 6 included a table of ETF inspections that did not include LERF inspections.

The entire Addendum I "Inspection Requirements" for the LERF/ETF dangerous waste permit was replaced as part of a modification June 30, 2011 (DOE/RL transmittal correspondence number 11-EMD-0086 and Ecology concurrence transmittal correspondence number 11-NWP-074). Table I.1 was added at this time and included the text needing correction. The correspondence did not note changing the frequency of inspection. As the change is inconsistent with both previous and current text, it is concluded that the Permittee did not intend to increase the inspection frequency (from weekly to daily) as part of the permit modification and Ecology did not intend to process that change. The change was made as a typographical error.

Additional changes to Table I-1: These are Administrative and Informational Changes:

- Added row for basin level indicator (entitled "LERF contents") to make the table consistent with Section I.1.2.3.2.
  - This row appears to have been overlooked when the summary of LERF inspections was added to the permit June 30, 2011 (11-EMD-0086 and 11-NWP-074).
  - This inspection requirement is described in Section I.1.2.3.2 and identifies a weekly inspection.
- Corrected item column description to "Leak Detections" for inspections to determine leak rate per wetted surface area to bring table into alignment with text in Section I.1.2.3.3 requirements.

Added text under "item" and "inspection" columns of TableI-1 for LERF basin to include dike in inspection row, to bring table into alignment with Section I.1.2.3.4 requirements.

Modification Approved: ☑ Yes ☐ No (state reason for denial)	Reviewed by Ecology:
Reason for denial:	S. L. Dahl-Crumpler — Date 3-19-14

[1] Class 1 modifications requiring prior Agency approval.

[2] 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 a Class [1]1, if appropriate.

Remove and Replace the Following Sections:

Remove Part III Permit Conditions, dated September 30, 2013, and replace with Permit Conditions, dated March 31, 2014.

Remove Addendum A, dated June 20, 2013 and replace with Addendum A, dated March 31, 2014.

Remove Addendum I, dated September 30, 2013 and replace with Addendum I, dated March 31, 2014.

PART III, OPERATING UNIT GROUP 3 PERMIT CONDITIONS

Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility

Unit Description:

The Liquid Effluent Retention Facility (LERF) and 200 Area Effluent Treatment Facility(200 Area ETF) consists of an aqueous waste treatment system that provides treatment, storage integral to the treatment process, and storage of secondary wastes from the treatment process for a variety of aqueous mixed waste. The 200 Area ETF is located in the 200 East Area. Aqueous wastes managed by the 200 Area ETF include process condensate from the LERF and 200 Area ETF 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 200 Area ETF for treatment in a series of process units, or systems, that remove or destroy essentially all of the dangerous waste constituents. 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 2000) and 200 Area ETF Delisting (40 CFR 261, Appendix IX, Table 2). Construction of the LERF began in 1990. Waste management operations began at LERF in April 1994. Construction of the 200 Area ETF began in 1992. Waste management operations began at 200 Area ETF in November of 1995.

This Chapter provides unit-specific Permit conditions applicable to the dangerous waste management units for LERF and 200 Area ETF.

List of Addenda Specific to Operating Unit Group 3

Addendum A	Part A Form, dated March 31, 2014
Addendum B	Waste Analysis Plan, dated March 31, 2013
Addendum C	Process Information, dated September 30, 2103
Chapter 5.0	Groundwater Monitoring (PNNL-11620 & WHC-SD-EN-AP-024), dated June 30, 2008
Addendum E	Security Requirements, dated, June 30, 2011
Addendum F	Preparedness and Prevention, dated June 20, 2013
Addendum G	Personnel Training, dated June 30, 2012
Addendum H	Closure Plan, dated June 30, 2011
Addendum I	Inspection Requirements, dated March 31, 2014
Addendum J	Contingency Plan, dated March 31, 2012

Definitions

State and federal delisting actions: The state delisting action pursuant to WAC 173-303-910(3), August 8, 2005, and the federal delisting action appearing in 40 CFR 261, Appendix IX, Table 2 applicable to the United States, Department of Energy, Richland, Washington.

Acronyms

LERF and 200 Area ETF 200-Area Liquids Processing Facility

III.3.A COMPLIANCE WITH UNIT-SPECIFIC PERMIT CONDITIONS

III.3.A.1 The Permittees will comply with all Permit Conditions in this Chapter and its Addendums and Chapters with respect to dangerous waste management and dangerous waste management units in LERF and 200 Area ETF, in addition to requirements in Permit Part I and Part II.

III.3.B GENERAL WASTE MANAGEMENT

III.3.B.1 The Permittees are authorized to accept dangerous and/or mixed waste for treatment in dangerous waste management units that satisfies the waste acceptance criteria in Permit Addendum B according to the waste acceptance procedures in Permit Addendum B. [WAC 173-303-300]

III.3.B.2 The Permittees are authorized to manage dangerous and/or mixed wastes physically present in the dangerous waste management units in LERF and 200 Area ETF as of the effective date of this Permit according to the requirements of Permit Condition III.15.B.1.

III.3.B.3 The Permittees are authorized to treat and/or store dangerous/mixed waste in the dangerous waste management units in LERF and 200 Area ETF according to the following requirements:

III.3.B.3.a The Permittees are authorized to treat, and store as necessary in support of treatment, dangerous waste in the 200 Area ETF tank systems identified in Permit Addendum C, Section C.2, and Section C.4 according to the Permit Conditions of this Chapter.

III.3.B.3.b The Permittees are authorized to store and treat those dangerous and/or mixed waste identified in Permit Addendum C, Section C.3, in containers according to the requirements of this Chapter. All container management activities pursuant to this Permit Condition will take place within the container storage area or within the 200 Area ETF process area identified in Permit Addendum C, Figure C.3.

III.3.B.3.c Treatment in containers authorized by Permit Condition III.3.B.3.b is limited to decanting of free liquids, and addition of sorbents to free liquids. The Permittees will ensure that sorbents are compatible with wastes and the containers. Sorbents will be compliant with the requirements of WAC 173-303-140(4)(b)(iv), incorporated by reference.

III.3.B.3.d The Permittees are authorized to treat aqueous waste in LERF Basins (Basins 42, 43 and 44) subject to the following requirements:

III.3.B.3.d.1 Following treatment in a LERF basin, aqueous wastes must be treated in 200 Area ETF according to Permit Conditions III.3.B.3.a through c.; [40 CFR 268.4(2)(iii), incorporated by reference by WAC 173-303-140]

III.3.B.3.d.2 The Permittees must ensure that for each basin, either supernatant is removed on a flow-through basis, to meet the requirement of 40 CFR 268.4(a)(2)(ii) incorporated by reference by WAC 173-303-140, or incoming waste is shown to not contain solids by either: (1) sampling results showing the waste does not contain detectable solids, or (2) filtering through a 10 micron filter;[WAC 173-303-815(2)(b)(ii)]

III.3.B.4 The Permittees will maintain the physical structure of the LERF and 200 Area ETF as documented in the applicable sections of Permit Addendum C, Section C.2. [WAC 173-303-630(7), WAC 173-303-640(3), WAC 173-303-640(4)]

III.3.B.5 The Permittees are authorized to use treated effluent for recycle/makeup water purposes at the 200 Area ETF as outlined in Permit Addendum C, Section C.2.5.5, and the letters dated August 19, 2005, EPA Region 10 to Keith A. Klein; and August 8, 2005, Department of Ecology to Keith A. Klein. [WAC 173-303-815 (2)(b)(ii)]

III.3.B.6 The Permittees will maintain and operate systems for the 200 Area ETF documented in Permit Addendum C, Section C.2.5 as necessary for proper operation of the 200 Area ETF, compliance with the conditions of this Permit, and protection of human health and the environment. For purposes of this Permit Condition, the Monitor and Control System documented in Permit Addendum C, Section C.2.5.1, is considered to include all indicators, sensors, transducers, actuators and other control devices connected to but remote from the centralized monitor and control system (MCS) computer.

III.3.B.7 The Permittees must complete the following requirements prior to acceptance for treatment in 200 Area ETF aqueous waste streams with listed waste numbers subject to the requirements of the State and Federal delisting: [WAC 173-303-815(2)(b)(ii)]

III.3.B.7.a The Permittees will prepare a written waste processing strategy according to the requirements of the State and Federal Delisting Actions Conditions (1)(a)(ii) and (1)(b), incorporated by reference, and Permit Addendum B, Section B.2.2.2.

III.3.B.7.b The waste processing strategy required by Permit Condition III.3.B.7.a, must document the proposed processing configuration for the 200 Area ETF, operating conditions for each processing unit, and the expected treated effluent characteristics based on the process model and treatability envelope data required by State and Federal Delisting Conditions (1)(a)(ii) and (1)(b).

III.3.B.7.c The written waste processing strategy required by Permit Condition III.3.B.7.a must demonstrate that the projected treated effluent characteristics satisfy the delisting exclusion limits in State and Federal Delisting Condition (5) of the state and federal delisting actions, and the discharge limits of the State Discharge Permit ST-4500.

III.3.B.7.d The Permittees will place a copy of the written waste processing strategy required by Permit Condition III.3.B.7.a in the Hanford Facility Operating Record, LERF and 200 Area ETF file as part of the documentation of waste streams accepted for management at the 200 Area ETF.

III.3.B.8 Treatment of aqueous waste streams in the 200 Area ETF with listed waste numbers that are subject to the requirements of the state and federal delisting actions must comply with the requirements of State and Federal Delisting Condition (1)(c), incorporated by reference. [WAC 173-303-815 (2)(b)(ii)]

III.3.B.9 The Permittees will manage treated effluent in the final verification tanks according to the requirements of the State and Federal Delisting Conditions (3) and (5), incorporated by reference. [WAC 173-303-815 (2)(b)(ii)]

III.3.B.10 The Permittees will manage treated effluent from the 200 Area ETF according to the requirements of the State Waste Discharge Permit ST 4500 and State and Federal Delisting Condition (7). [WAC 173-303-815(2)(b)(ii)]

III.3.B.11 The Permittees will ensure compliance with treatment standards (40 CFR 268, incorporated by reference by WAC 173-303-140) applicable to treated effluent prior to discharge to the State Authorized Land Disposal Site (SALDS), the delisting criteria at 40 CFR 261, Appendix IX, Table 2, and the corresponding state-approved delisting (dated August 8, 2005, all incorporated by reference). Sampling and analysis necessary for these demonstrations must meet the corresponding requirements in Permit Addendum B. [WAC 173-303-140, WAC 173-303-815 (2)(b)(ii)]

III.3.C WASTE ANALYSIS

III.3.C.1 The Permittees will comply with requirements in Permit Addendum B for sampling and analysis of all dangerous and/or mixed waste required by conditions in this Chapter. [WAC 173-303-300]

III.3.C.2 The Permittees will have an accurate and complete waste profile as described in Permit Addendum B, Section B.2.1.2, for every waste stream accepted for management in LERF and 200 Area ETF dangerous waste management units. [WAC 173-303-380 (1)(a), (b)]

III.3.C.3 The Permittees will place a copy of each waste profile required by Permit Condition III.15.C.2 in the Hanford Facility Operating Record, LERF and 200 Area ETF file required by Permit Condition II.I.2. [WAC 173-303-380 (1)(a), (b)]

III.3.C.4 The Permittees will make a copy of the waste profile required by Permit Condition III.15.C.2 available upon request. [WAC 173-303-380 (1)(a), (b)]

III.3.C.5 Records and results of waste analysis described in this Permit will be maintained in the Hanford Facility Operating Record, LERF and 200 Area ETF file required by Permit Condition II.I.2. [WAC 173-303-380 (1)(a), (b)]

III.3.D RECORDKEEPING AND REPORTING

III.3.D.1 The Permittees will place the following into the Hanford Facility Operating Record, LERF and 200 Area ETF file required by Permit Condition II.I.2:

III.3.D.1.a Records required by WAC 173-303-380 (1)(k), and -(o) incorporated by reference.

III.3.D.1.b Records and results of waste analysis, waste determinations (as required by Subpart CC) and trial tests required by WAC 173-303-300, General waste analysis, and by 40 CFR §264.1034,§264.1063, §264.1083, §265.1034, §265.1063, §265.1084, §268.4(a), and §268.7; [WAC 173-303-310(2)]

III.3.D.1.c An inspection log, summarizing inspections conducted pursuant to Permit Condition III.3.H.1; [WAC 173-303-380(1)(e)]

III.3.D.1.d Records required by the State and Federal Delisting Condition (6), incorporated by reference; [WAC 173-303-815 (2)(b)(ii)]

III.3.E SECURITY

III.3.E.1 The Permittees comply with the Security requirements specific to the LERF and 200 Area ETF in Addendum E and Permit Attachment 3 as required by Permit Condition II.L. [WAC 173-303-310(2)]

III.3.F PREPAREDNESS AND PREVENTION

III.3.F.1 The Permittees will comply with the Preparedness and Prevention requirements specific to LERF and 200 Area ETF in Addendum F. [WAC 173-303-340]

III.3.G CONTINGENCY PLAN

III.3.G.1 The Permittees will comply with Addendum J, Contingency Plan, in addition to the requirements of Permit Condition II.A when applicable. [WAC 173-303-350]

III.3.H INSPECTIONS

III.3.H.1 The Permittees will comply with Addendum I in addition to the requirements of Permit Condition II.X. [WAC 173-303-320]

III.3.I TRAINING PLAN

III.3.I.1 The Permittees will include the training requirements described in Addendum G of this Chapter specific to the dangerous waste management units and waste management activities at LERF and 200 Area ETF into the written training plan required by Permit Condition II.C.

III.3.J GENERAL REQUIREMENTS

III.3.J.1 The Permittees will comply with the requirements of WAC 173-303-395(1), incorporated by reference, for prevention of reaction of ignitable, reactive, or incompatible wastes.

III.3.K CLOSURE

III.3.K.1 The Permittees will close dangerous waste management units in the LERF and 200 Area ETF in accordance with Addendum H, Closure Plan, and Permit Condition II.J. [WAC 173-303-610(3)(a)]

III.3.L POST CLOSURE – RESERVED

III.3.M CRITICAL SYSTEMS – RESERVED

III.3.N RESERVED

III.3.O CONTAINERS

III.3.O.1 Container Storage and Treatment Unit Standards

III.3.O.1.a As part of or in addition to the requirements of Permit Condition III.3.B.2, the Permittees will ensure the integrity of container storage secondary containment and the chemically resistant coating described in Addendum C, Section C.3.4.1 as necessary to ensure any spills or releases to secondary containment do not migrate to the underlying concrete or soils.

III.3.O.1.a.1 Include documentation of any damage and subsequent repairs in the Hanford Facility Operating Record, LERF and 200 Area ETF file required by Permit Condition II.I.2.

III.3.O.2 Container Management Standards

III.3.O.2.a The Permittees will maintain and manage wastes in accordance with the requirements of Addendum C, Section 4.3.2, and Section 4.3.2. [WAC 173-303-630(2)]

III.3.O.2.b The Permittees will label containers in accordance with the requirements of Addendum C, Section C.3.2, and Section C.3.3. [WAC 173-303-630(3)]

III.3.O.2.c The Permittees will comply with the requirements for managing wastes in containers in WAC 173-303-630(5), incorporated by reference.

III.3.O.2.d The Permittees will ensure wastes are compatible with containers and with other wastes stored or treated in containers within the 200 Area ETF according to the requirements of Addendum C, Section C.3.4.3. [WAC 173-303-630(4), WAC 173-303-630(9)]

III.3.O.2.e The Permittees may treat wastes in containers via decanting of free liquids and addition of sorbents. The Permittees may not use addition of sorbents for purposes of changing the treatability group of a waste with respect to the land disposal restriction standards of 40 CFR 268, incorporated by reference by WAC 173-303-140.

III.3.O.2.f The Permittees will remove any accumulated liquids from container storage areas in 200 Area ETF according to the requirements of Addendum C, Section C.3.4.2, to ensure containers are not in contact with free liquids and to prevent overflow of the container storage area secondary containment.

III.3.O.2.g The Permittees will comply with the requirements for air emissions from containers in Addendum C, Section C.6.3.2. [WAC 173-303-692]

III.3.P TANK SYSTEMS

III.3.P.1 Tank System Requirements

III.3.P.1.a The Permittees will develop a schedule for conducting integrity assessments (IA). The schedule will meet the requirements of Addendum C, Section C.4.2, and consideration of the factors in WAC 173-303-640(2)(e) or WAC 173-303-640(3)(b) as applicable:

III.3.P.1.b The Permittees will maintain a copy of the schedule required by Permit Condition III.3.P.1.a, in the Hanford Facility Operating Record, LERF and 200 Area ETF file, and conduct periodic integrity assessments according to the schedule. The Permittees will document results of integrity assessments conducted according to the IA in the Hanford Facility Operating Record, LERF and 200 Area ETF file.

III.3.P.1.c For existing tank systems, if a tank system is found to be leaking, or is unfit for use, the Permittees must follow the requirements of WAC 173-303-640(7), incorporated by reference. [WAC 173-303-640(3)(b)]

III.3.P.2 Tank System Operating Requirements

III.3.P.2.a The Permittees will comply with the requirements of WAC 173-303-640(5)(a), incorporated by reference.

III.3.P.2.b The Permittees will comply with the requirements of Addendum C, Section C.4.5.2. [WAC 173-303-640(5)(b)]

III.3.P.2.c The Permittees will comply with the requirements of Addendum C, Section C.4.6. [WAC 173-303-640(5)(d)]

III.3.P.2.d The Permittees will comply with the requirements of WAC 173-303-640(7), incorporated by reference, in response to spills or leaks from tanks systems at 200 Area ETF. [WAC 173-303-640(5)(c)]

III.3.P.2.e The Permittees will ensure that the Waste Processing Strategy required by Permit Condition III.3.B.7.a, provides for the immediate treatment or blending of waste accepted for management at the 200 Area ETF such that the resulting waste or mixture is no longer reactive or ignitable when further managed in 200 Area ETF tank systems. [WAC 173-303-640(9)]

III.3.P.2.f The Permittees will comply with the requirements of WAC 173-303-640(10), incorporated by reference.

III.3.Q SURFACE IMPOUNDMENTS

III.3.Q.1 The Permittees will maintain the three LERF basins according to the requirements of WAC 173-303-650 (2)(f), incorporated by reference.

III.3.Q.2 The Permittees will operate the LERF basins according to the requirements of Addendum C, Section C.5.3, and Addendum I, Section I.2.2.3.1 to prevent over-topping. [WAC 173-303-650 (2)(c)]

III.3.Q.3 The Permittees will develop and maintain, and operate the LERF basins to ensure that any flow of waste into the impoundment can be immediately shut off in the event of overtopping or liner failure. [WAC 173-303-650 (2)(d)]

III.3.Q.4 The Permittees will comply with the requirements of WAC 173-303-650 (2)(g), incorporated by reference.

III.3.Q.5 The Permittees will comply with the requirements of WAC 173-303-650 (4)(b), incorporated by reference.

III.3.Q.6 The Permittees will comply with the requirements of WAC 173-303-650 (4)(c), incorporated by reference. The certification required by this Permit Condition must be provided to Ecology no later than seven calendar days after the date of the certification. A copy of the certification will be placed in the Hanford Facility Operating Record, LERF and 200 Area ETF file required by Permit Condition II.I.2. [WAC 173-303-650 (4)(c)]

III.3.Q.7 The Permittees will comply with the requirements of WAC 173-303-650(5)(b), incorporated by reference, in response to events in WAC 173-303-650(5)(a), incorporated by reference.

III.3.Q.8 The Permittees will comply with the requirements of WAC 173-303-650(5)(d) for any LERF basin that has been removed from service in accordance with Permit Condition III.3.Q.7 that the Permittees will restore to service. [WAC 173-303-650(5)(d)]

III.3.Q.9 The Permittees will close any LERF basin removed from service in accordance with the requirements of Permit Condition III.3.Q.7 or a basin that cannot be repaired or that the Permittees will not to return to service. [WAC 173-303-650(5)(e)]

III.3.Q.10 The Permittees will comply with the requirements of Addendum C, Section C.5.10 with respect to management of ignitable or reactive wastes in the LERF basins. [WAC 173-303-650(7)]

III.3.Q.11 The Permittees can place incompatible wastes and materials in the same LERF basin only if in compliance with the requirements of WAC 173-303-395(1)(b), (c). [WAC 173-303-650(8)]

III.3.Q.12 The Permittees will use the action leakage rate in Addendum C, Section C.5.8, for operation of LERF basins, and comply with the requirements of WAC 173-303-650(10)(b). [WAC 173-303-650(10)]

III.3.Q.13 The Permittees will comply with the requirements of WAC 173-303-650(11), incorporated by reference.

III.3.Q.14 The Permittees will comply with the requirements of 40 CFR 264, Subpart CC, incorporated by reference by WAC 173-303-692.

III.3.Q.15 Groundwater Monitoring

III.3.Q.15.a The Permittees will comply with the requirements of Chapter 5.0. [WAC 173-303-645]

This page intentionally left blank.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Addendum A
Part A Form

Date Received	Reviewed by:	Date: 06 01 2011
Month Day Year	Approved by:	Date: 06 08 2011

I. This form is submitted to: (place an "X" in the appropriate box)

☒	**Request modification to a final status permit (commonly called a "Part B" permit)**
☐	**Request a change under interim status**
☐	**Apply for a final status permit. This includes the application for the initial final status permit for a site or for a permit renewal (i.e., a new permit to replace an expiring permit).**
☐	**Establish interim status because of the wastes newly regulated on:** (Date)
	List waste codes:

II. EPA/State ID Number

W A 7 8 9 0 0 0 8 9 6 7

III. Name of Facility

US Department of Energy – Hanford Facility

IV. Facility Location (Physical address not P.O. Box or Route Number)

A. Street

825 Jadwin

City or Town	State	ZIP Code
Richland	WA	99352

County Code (if known)	County Name
0 0 5	Benton

B. Land Type	C. Geographic Location Latitude (degrees, mins, secs)	Longitude (degrees, mins, secs)	D. Facility Existence Date Month Day Year
F	Refer to TOPO Map (Section XV.)		03 02 1943

V. Facility Mailing Address

Street or P.O. Box

P.O. Box 550

City or Town	State	ZIP Code
Richland	WA	99352

VI. Facility contact (Person to be contacted regarding waste activities at facility)	
Name (last)	**(first)**
McCormick	Matthew
Job Title	**Phone Number (area code and number)**
Manager	(509) 376-7395
Contact Address	
Street or P.O. Box	
P.O. Box 550	

City or Town	State	ZIP Code
Richland	WA	99352

VII. Facility Operator Information	
A. Name	**Phone Number**
Department of Energy Owner/Operator CH2M HILL Plateau Remediation Company Co-Operator for LERF & 200 Area ETF*	(509) 376-7395 (509) 376-0556*
Street or P.O. Box	
P.O. Box 550 P.O. Box 1600 *	

City or Town	State	ZIP Code
Richland	WA	99352

B. Operator Type F

C. Does the name in VII.A reflect a proposed change in operator? ☐ Yes ☒ No Co-Operator* change

If yes, provide the scheduled date for the change:

Month		Day		Year			
1	0	0	1	2	0	0	8

D. Is the name listed in VII.A. also the owner? If yes, skip to Section VIII.C. ☐ Yes ☒ No

VIII. Facility Owner Information	
A. Name	**Phone Number (area code and number)**
Matthew S. McCormick, Operator/Facility-Property Owner	(509) 376-7395
Street or P.O. Box	
P.O. Box 550	

City or Town	State	ZIP Code
Richland	WA	99352

B. Owner Type F

C. Does the name in VIII.A reflect a proposed change in owner? ☐ Yes ☒ No

If yes, provide the scheduled date for the change:

Month		Day		Year			

IX. NAICS Codes (5/6 digit codes)

A. First							B. Second						
5	6	2	2	1		Waste Treatment & Disposal	9	2	4	1	1	0	Administration of Air & Water Resource & Solid Waste Management Programs
C. Third							**D. Fourth**						
5	4	1	7	1		Research & Development in the Physical, Engineering, & Life Sciences							

X. Other Environmental Permits (see instructions)

A. Permit Type	B. Permit Number	C. Description
E	TSCA03-10-22	TSCA approval, 40 CFR 761
E	WCM-127	40 CFR 761.61(c), TSCA risk-based approval 2003-10-22
E	AOP00-05-006	Title V Air Operating Permit
E	DE07NWP-003	WAC 173-400 & -460 Criteria & Toxics approval
E	FF-01-146	WAC 246-247 Radioactive Air Emissions approval, LERF Basin 44, EU 146, AIR 12-305
E	FF-01-147	WAC 246-247 Radioactive Air Emissions approval, LERF Basin 43, EU 147, AIR 12-305
E	FF-01-148	WAC 246-247 Radioactive Air Emissions approval, LERF Basin 42, EU 148, AIR 12-305
E	FF-01-301	WAC 246-247 Radioactive Air Emissions approval, ETF, EU 301, AIR 12-305
U	ST 4500	WAC 173-216, State Waste Discharge Permit for the 200 Area Effluent Treatment Facility State-Approved Land Disposal Site
U	ST 4511	WAC 173-216, State Waste Discharge Permit Program, Sitewide Permit for miscellaneous streams

XI. Nature of Business (provide a brief description that includes both dangerous waste and non-dangerous waste areas and activities)

Construction of the Liquid Effluent Retention Facility (LERF) began in 1990. Waste management operations began at LERF in April 1994. Construction of the 200 Area Effluent Treatment Facility (ETF) began in 1992. Waste management operations began at ETF in November of 1995.

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 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 dangerous waste constituents. 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 (ST4500) and the Final Delisting (40 CFR 261, Appendix IX, Table 2)

Sludge that accumulates in the bottoms of ETF process tanks is removed periodically and placed into containers. The waste is solidified by decanting the supernate from the container and the remainder of the liquid is allowed to evaporate, or absorbents are added, as necessary, to address the residual liquid. The process design capacity for treatment of waste in containers (T04) is 18,927 liters per day.

EXAMPLE FOR COMPLETING ITEMS XII and XIII (shown in lines numbered X-1, X-2, and X-3 below): A facility has two storage tanks that hold 1200 gallons and 400 gallons respectively. There is also treatment in tanks at 20 gallons/hr. Finally, a one-quarter acre area that is two meters deep will undergo *in situ vitrification.*

Section XII. Process Codes and Design Capacities								Section XIII. Other Process Codes								
Line Number		A. Process Codes (enter code)			B. Process Design Capacity		C. Process Total Number of Units	Line Number		A. Process Codes (enter code)			B. Process Design Capacity		C. Process Total Number of Units	D. Process Description
					1. Amount	2. Unit of Measure (enter code)							1. Amount	2. Unit of Measure (enter code)		
X	**1**	**S**	**0**	**2**	**1,600**	**G**	**002**	**X**	**1**	**T**	**0**	**4**	**700**	**C**	**001**	**In situ vitrification**
X	**2**	**T**	**0**	**3**	**20**	**E**	**001**									
X	**3**	**T**	**0**	**4**	**700**	**C**	**001**									
	1	S	0	4	88,500,000	L	003		**1**	T	0	4	18,927	V	001	container treatment
	2	T	0	2	88,500,000	V	003		**2**							
	3	S	0	2	9,849,350	L	019		**3**							
	4	T	0	1	817,646	V	019		**4**							
	5	S	0	1	147,630	L	003		**5**							
	6	T	0	4	18,927	V	001		**6**							
	7								**7**							
	8								**8**							
	9								**9**							
1	**0**							**1**	**0**							
1	**1**							**1**	**1**							
1	**2**							**1**	**2**							
1	**3**							**1**	**3**							
1	**4**							**1**	**4**							
1	**5**							**1**	**5**							
1	**6**							**1**	**6**							
1	**7**							**1**	**7**							
1	**8**							**1**	**8**							
1	**9**							**1**	**9**							
2	**0**							**2**	**0**							
2	**1**							**2**	**1**							
2	**2**							**2**	**2**							
2	**3**							**2**	**3**							
2	**4**							**2**	**4**							
2	**5**							**2**	**5**							

XIV. Description of Dangerous Wastes

Example for completing this section: A facility will receive three non-listed wastes, then store and treat them on-site. Two wastes are corrosive only, with the facility receiving and storing the wastes in containers. There will be about 200 pounds per year of each of these two wastes, which will be neutralized in a tank. The other waste is corrosive and ignitable and will be neutralized then blended into hazardous waste fuel. There will be about 100 pounds per year of that waste, which will be received in bulk and put into tanks.

Line Number	A. Dangerous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Processes									
							(1) Process Codes (enter)									(2) Process Description [If a code is not entered in D (1)]
X 1	D	0	0	2	400	P	S	0	1	T	0	1				
X 2	D	0	0	1	100	P	S	0	2	T	0	1				
X 3	D	0	0	2												Included with above
1	D	0	0	1	106,940,410	K	S	0	4	T	0	2				
2	D	0	0	2		K	S	0	4	T	0	2				
3	D	0	0	3		K	S	0	4	T	0	2				
4	D	0	0	4		K	S	0	4	T	0	2				
5	D	0	0	5		K	S	0	4	T	0	2				
6	D	0	0	6		K	S	0	4	T	0	2				
7	D	0	0	7		K	S	0	4	T	0	2				
8	D	0	0	8		K	S	0	4	T	0	2				
9	D	0	0	9		K	S	0	4	T	0	2				
10	D	0	1	0		K	S	0	4	T	0	2				
11	D	0	1	1		K	S	0	4	T	0	2				
12	D	0	1	8		K	S	0	4	T	0	2				
13	D	0	1	9		K	S	0	4	T	0	2				
14	D	0	2	2		K	S	0	4	T	0	2				
15	D	0	2	8		K	S	0	4	T	0	2				
16	D	0	2	9		K	S	0	4	T	0	2				
17	D	0	3	0		K	S	0	4	T	0	2				
18	D	0	3	3		K	S	0	4	T	0	2				
19	D	0	3	4		K	S	0	4	T	0	2				
20	D	0	3	5		K	S	0	4	T	0	2				
21	D	0	3	6		K	S	0	4	T	0	2				
22	D	0	3	8		K	S	0	4	T	0	2				
23	D	0	3	9		K	S	0	4	T	0	2				
24	D	0	4	0		K	S	0	4	T	0	2				
25	D	0	4	1		K	S	0	4	T	0	2				

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Process									
							(1) Process Codes (enter)									(2) Process Description [If a code is not entered in D (1)]
26	D	0	4	3		K	S	0	4	T	0	2				
27	F	0	0	1		K	S	0	4	T	0	2				
28	F	0	0	2		K	S	0	4	T	0	2				
29	F	0	0	3		K	S	0	4	T	0	2				
30	F	0	0	4		K	S	0	4	T	0	2				
31	F	0	0	5		K	S	0	4	T	0	2				
32	F	0	3	9		K	S	0	4	T	0	2				
33	W	T	0	1		K	S	0	4	T	0	2				
34	W	T	0	2		K	S	0	4	T	0	2				
35	U	2	1	0		K	S	0	4	T	0	2				
36	D	0	0	1	106,940,410	K	T	0	1							
37	D	0	0	2		K	T	0	1							
38	D	0	0	3		K	T	0	1							
39	D	0	0	4		K	T	0	1							
40	D	0	0	5		K	T	0	1							
41	D	0	0	6		K	T	0	1							
42	D	0	0	7		K	T	0	1							
43	D	0	0	8		K	T	0	1							
44	D	0	0	9		K	T	0	1							
45	D	0	1	0		K	T	0	1							
46	D	0	1	1		K	T	0	1							
47	D	0	1	8		K	T	0	1							
48	D	0	1	9		K	T	0	1							
49	D	0	2	2		K	T	0	1							
50	D	0	2	8		K	T	0	1							
51	D	0	2	9		K	T	0	1							
52	D	0	3	0		K	T	0	1							
53	D	0	3	3		K	T	0	1							
54	D	0	3	4		K	T	0	1							
55	D	0	3	5		K	T	0	1							

56	D	0	3	6		K	T	0	1							
57	D	0	3	8		K	T	0	1							
58	D	0	3	9		K	T	0	1							
59	D	0	4	0		K	T	0	1							
60	D	0	4	1		K	T	0	1							
61	D	0	4	3		K	T	0	1							
62	F	0	0	1		K	T	0	1							
63	F	0	0	2		K	T	0	1							
64	F	0	0	3		K	T	0	1							
65	F	0	0	4		K	T	0	1							
66	F	0	0	5		K	T	0	1							
67	F	0	3	9		K	T	0	1							
68	W	T	0	1		K	T	0	1							
69	W	T	0	2		K	T	0	1							
70	U	2	1	0		K	T	0	1							
71	D	0	0	1	106,940,410	K	S	0	2							
72	D	0	0	2		K	S	0	2							
73	D	0	0	3		K	S	0	2							
74	D	0	0	4		K	S	0	2							
75	D	0	0	5		K	S	0	2							
76	D	0	0	6		K	S	0	2							
77	D	0	0	7		K	S	0	2							
78	D	0	0	8		K	S	0	2							
79	D	0	0	9		K	S	0	2							
80	D	0	1	0		K	S	0	2							
81	D	0	1	1		K	S	0	2							
82	D	0	1	8		K	S	0	2							
83	D	0	1	9		K	S	0	2							
84	D	0	2	2		K	S	0	2							
85	D	0	2	8		K	S	0	2							

86	D	0	2	9		K	S	0	2							
87	D	0	3	0		K	S	0	2							
88	D	0	3	3		K	S	0	2							
89	D	0	3	4		K	S	0	2							
90	D	0	3	5		K	S	0	2							
91	D	0	3	6		K	S	0	2							
92	D	0	3	8		K	S	0	2							
93	D	0	3	9		K	S	0	2							
94	D	0	4	0		K	S	0	2							
95	D	0	4	1		K	S	0	2							
96	D	0	4	3		K	S	0	2							
97	F	0	0	1		K	S	0	2							
98	F	0	0	2		K	S	0	2							
99	F	0	0	3		K	S	0	2							
100	F	0	0	4		K	S	0	2							
101	F	0	0	5		K	S	0	2							
102	F	0	3	9		K	S	0	2							
103	W	T	0	1		K	S	0	2							
104	W	T	0	2		K	S	0	2							
105	U	2	1	0		K	S	0	2							
106	D	0	0	1	153,932	K	S	0	1							Includes Debris
107	D	0	0	2		K	S	0	1							Includes Debris
108	D	0	0	3		K	S	0	1							Includes Debris
109	D	0	0	4		K	S	0	1							Includes Debris
110	D	0	0	5		K	S	0	1							Includes Debris
111	D	0	0	6		K	S	0	1							Includes Debris
112	D	0	0	7		K	S	0	1							Includes Debris
113	D	0	0	8		K	S	0	1							Includes Debris
114	D	0	0	9		K	S	0	1							Includes Debris
115	D	0	1	0		K	S	0	1							Includes Debris
116	D	0	1	1		K	S	0	1							Includes Debris

117	D	0	1	8		K	S	0	1							Includes Debris
118	D	0	1	9		K	S	0	1							Includes Debris
119	D	0	2	2		K	S	0	1							Includes Debris
120	D	0	2	8		K	S	0	1							Includes Debris
121	D	0	2	9		K	S	0	1							Includes Debris
122	D	0	3	0		K	S	0	1							Includes Debris
123	D	0	3	3		K	S	0	1							Includes Debris
124	D	0	3	4		K	S	0	1							Includes Debris
125	D	0	3	5		K	S	0	1							Includes Debris
126	D	0	3	6		K	S	0	1							Includes Debris
127	D	0	3	8		K	S	0	1							Includes Debris
128	D	0	3	9		K	S	0	1							Includes Debris
129	D	0	4	0		K	S	0	1							Includes Debris
130	D	0	4	1		K	S	0	1							Includes Debris
131	D	0	4	3		K	S	0	1							Includes Debris
132	F	0	0	1		K	S	0	1							Includes Debris
133	F	0	0	2		K	S	0	1							Includes Debris
134	F	0	0	3		K	S	0	1							Includes Debris
135	F	0	0	4		K	S	0	1							Includes Debris
136	F	0	0	5		K	S	0	1							Includes Debris
137	F	0	3	9		K	S	0	1							Includes Debris
138	W	T	0	1		K	S	0	1							Includes Debris
139	W	T	0	2		K	S	0	1							Includes Debris
140	U	2	1	0		K	S	0	1							Includes Debris
141	D	0	0	1	81,310	K	T	0	4							Includes Debris
142	D	0	0	2		K	T	0	4							Includes Debris
143	D	0	0	3		K	T	0	4							Includes Debris
144	D	0	0	4		K	T	0	4							Includes Debris
145	D	0	0	5		K	T	0	4							Includes Debris
146	D	0	0	6		K	T	0	4							Includes Debris
147	D	0	0	7		K	T	0	4							Includes Debris
148	D	0	0	8		K	T	0	4							Includes Debris

149	D	0	0	9		K	T	0	4							Includes Debris
150	D	0	1	0		K	T	0	4							Includes Debris
151	D	0	1	1		K	T	0	4							Includes Debris
152	D	0	1	8		K	T	0	4							Includes Debris
153	D	0	1	9		K	T	0	4							Includes Debris
154	D	0	2	2		K	T	0	4							Includes Debris
155	D	0	2	8		K	T	0	4							Includes Debris
156	D	0	2	9		K	T	0	4							Includes Debris
157	D	0	3	0		K	T	0	4							Includes Debris
158	D	0	3	3		K	T	0	4							Includes Debris
159	D	0	3	4		K	T	0	4							Includes Debris
160	D	0	3	5		K	T	0	4							Includes Debris
161	D	0	3	6		K	T	0	4							Includes Debris
162	D	0	3	8		K	T	0	4							Includes Debris
163	D	0	3	9		K	T	0	4							Includes Debris
164	D	0	4	0		K	T	0	4							Includes Debris
165	D	0	4	1		K	T	0	4							Includes Debris
166	D	0	4	3		K	T	0	4							Includes Debris
167	F	0	0	1		K	T	0	4							Includes Debris
168	F	0	0	2		K	T	0	4							Includes Debris
169	F	0	0	3		K	T	0	4							Includes Debris
170	F	0	0	4		K	T	0	4							Includes Debris
171	F	0	0	5		K	T	0	4							Includes Debris
172	F	0	3	9		K	T	0	4							Includes Debris
173	W	T	0	1		K	T	0	4							Includes Debris
174	W	T	0	2		K	T	0	4							Includes Debris
175	U	2	1	0		K	T	0	4							Includes Debris
176																
177																
178																
179																
180																

181																
182																
183																
184																

XV. Map

Attach to this application a topographic map of the area extending to at least one (1) mile beyond property boundaries. The map must show the outline of the facility; the location of each of its existing and proposed intake and discharge structures; each of its dangerous waste treatment, storage, recycling, or disposal units; and each well where fluids are injected underground. Include all springs, rivers, and other surface water bodies in this map area, plus drinking water wells listed in public records or otherwise known to the applicant within ¼ mile of the facility property boundary. The instructions provide additional information on meeting these requirements.

Topographic map is located in the Ecology Library

XVI. Facility Drawing

All existing facilities must include a scale drawing of the facility (refer to Instructions for more detail).

XVII. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, recycling, and disposal areas; and sites of future storage, treatment, recycling, or disposal areas (refer to Instructions for more detail).

XVIII. Certifications

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Operator Name and Official Title (type or print) Matthew S. McCormick, Manager U.S. Department of Energy Richland Operations Office	**Signature** Doug A. Shoop for	**Date Signed** 5/27/11
Co-Operator* Name and Official Title (type or print) John C. Fulton President and Chief Executive Officer CH2M HILL Plateau Remediation Company	**Signature**	**Date Signed** 5/12/11
Co-Operator – Address and Telephone Number* P.O. Box 1600 Richland, WA 99352 (509) 376-0556		
Facility-Property Owner Name and Official Title (type or print) Matthew S. McCormick, Manager U.S. Department of Energy Richland Operations Office	**Signature** Doug A. Shoop	**Date Signed** 5/27/11

Comments
Section XII. Process Codes and Design Capacities – B.1 (6/20/2013): Amount, changed 7,608,654 L to 9,849,350 L for S02. Section XIV. Description of Dangerous Waste – B (6/20/2013): Estimated Annual Quantity of Waste, changed 88,497,000 K to 106,940,410 K for S04T02 on line numbers 1 through 35; 298,434,296 K to 106,940,410 K for T01 on line numbers 36 through 70; 30,433,326 K to 106,940,410 K for S02 on line numbers 71 through 105; and 1,986,735 K to 153,932 K for S01 on line numbers 106 through 140. Section XVIII. Certifications – for Co-Operator (6/20/2013): "John G. Lehew III" to "John C. Fulton". Photographs (6/20/2013): Added photograph of LERF and 200 Area ETF. Revision Number (3/31/2014): Change from 3 to 3A Section X. Other Environmental Permits (Deleted) (3/31/2014): • NOC-93-3, WAC 173-400, General Regulations for Air Pollution Sources / WAC 173-460 Controls for New Sources of Toxic Air Pollutants • NOC-96NW-1-301, WAV 173-400, General Regulations for Air Pollution Sources / WAC 173-460 Controls for New Sources of Toxic Air Pollutants • AIR-04-101 – WAC 246-247, Radiation Protection –- Air Emissions Section X. Other Environmental Permits (Added) (3/31/2014): • AOP 00-05-006, Title V Air Operating Permit • DE07NWP-003, WAC 173-400 & 460 Criteria & Toxics approval • FF-01-146, WAC 246-247, Radioactive Air Emissions Approval, LERF Basin 44, EU 146, AIR 12-305 • FF-01-147, WAC 246-247, Radioactive Air Emissions Approval, LERF Basin 43, EU 147, AIR 12-305 • FF-01-148, WAC 246-247, Radioactive Air Emissions Approval, LERF Basin 42, EU 148, AIR 12-305 • FF-01-301, WAC 246-247, Radioactive Air Emissions Approval, ETF, EU 301, AIR 12-305 Section XII. Process Codes and Design Capacities – C Process Total Number of Units (3/31/2014): Changed 17 to 19 for T01

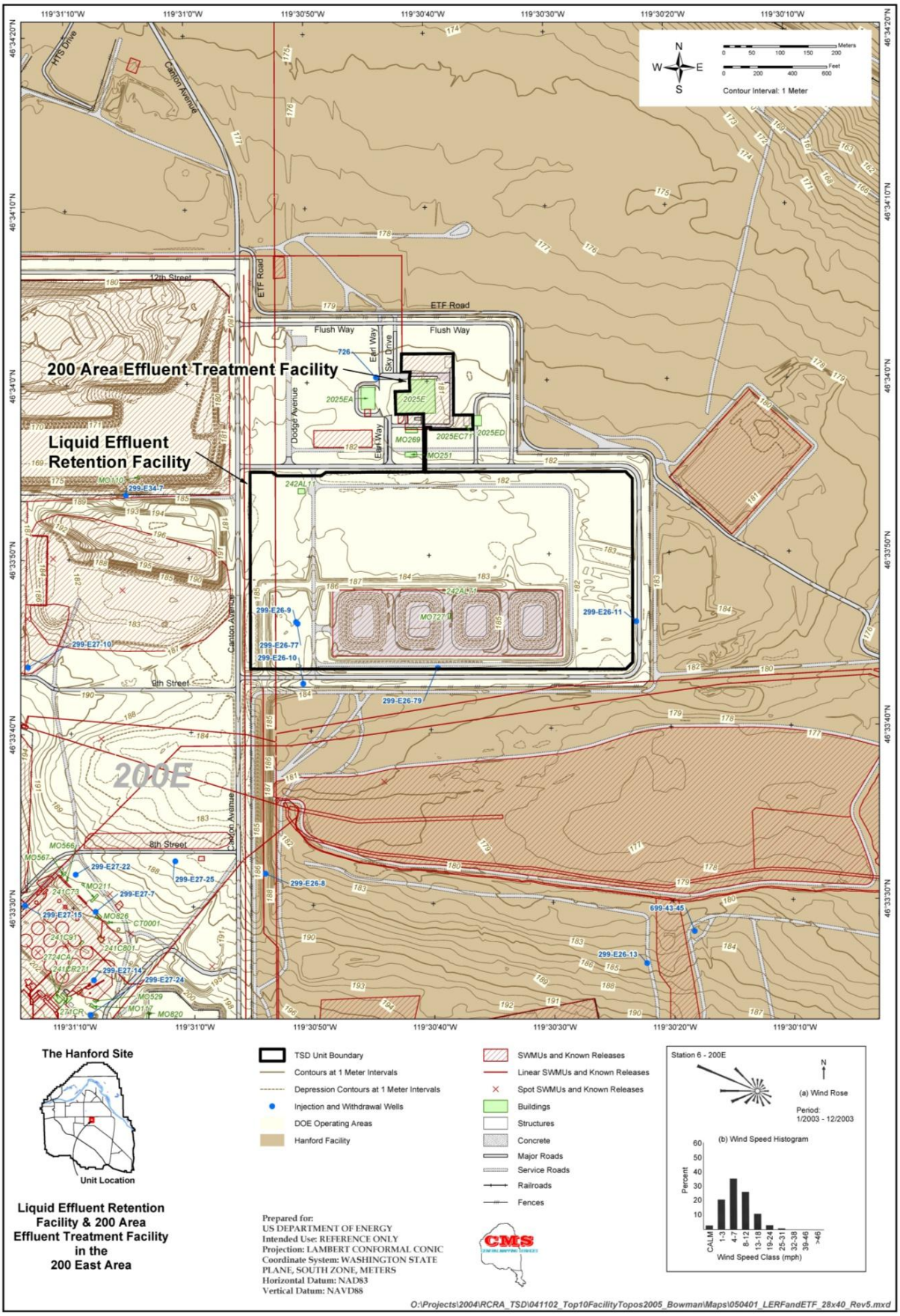
Liquid Effluid Effluent Retention Facility & 200 Area Effluent Treatment Facility

Liquid Effluent Retention Facility

Typical Basin Photo Taken 1992

200 Area Effluent Treatment Facility

Photo Taken 2005


200 Area Effluent Treatment Facility
Liquid Effluent Retention Facility
200E
ETF Road
Flush Way
Sky Drive
Earl Way
Dodge Avenue
Canton Avenue
12th Street
9th Street
8th Street
HTS Drive
Contour Interval: 1 Meter
The Hanford Site
Unit Location
Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility in the 200 East Area
TSD Unit Boundary
Contours at 1 Meter Intervals
Depression Contours at 1 Meter Intervals
Injection and Withdrawal Wells
DOE Operating Areas
Hanford Facility
SWMUs and Known Releases
Linear SWMUs and Known Releases
Spot SWMUs and Known Releases
Buildings
Structures
Concrete
Major Roads
Service Roads
Railroads
Fences
Station 6 - 200E
(a) Wind Rose
Period: 1/2003 - 12/2003
(b) Wind Speed Histogram
Percent
Wind Speed Class (mph)
Prepared for:
US DEPARTMENT OF ENERGY
Intended Use: REFERENCE ONLY
Projection: LAMBERT CONFORMAL CONIC
Coordinate System: WASHINGTON STATE PLANE, SOUTH ZONE, METERS
Horizontal Datum: NAD83
Vertical Datum: NAVD88
O:\Projects\2004\RCRA_TSD\041102_Top10FacilityTopos2005_Bowman\Maps\050401_LERFandETF_28x40_Rev5.mxd

Addendum I Inspection Requirements

I. INSPECTION REQUIREMENTS I.1

I.1 INSPECTION PLAN I.1
I.1.1 General Inspection Requirements I.1
I.1.2 Specific Process Inspection Requirements I.1
I.1.3 Inspection Log I.4
I.1.4 Storage of Ignitable or Reactive Wastes I.4

Tables

Table I.1. Visual Inspection Schedule for the LERF and 200 Area ETF I.5
Table I.2. Inspection Plan for Instrumentation Monitoring I.7

This page intentionally left blank.

I. INSPECTION REQUIREMENTS

I.1 INSPECTION PLAN

This addendum describes the method and schedule for inspections of LERF and 200 Area ETF. The purpose of inspections is to help ensure that situations do not exist that might cause or lead to the release of dangerous and/or mixed waste that could pose a threat to human health and the environment. Abnormal conditions identified by an inspection will be corrected on a schedule that prevents hazards to workers, the public, and the environment.

I.1.1 General Inspection Requirements

The content and frequency of inspections are described in this section. Inspection records are retained in the Hanford Facility Operating Record, LERF and 200 Area ETF file, or other approved locations, in accordance with Permit Condition II.I.1.

In certain areas of the 200 Area ETF, many inspections are performed remotely to maintain ALARA exposure. Monitoring instruments are connected to audible alarms and visual indicators track alarm status. The monitoring system provides trending of selected monitoring data, graphics, and equipment summary displays.

A preventive maintenance recall system is employed to direct preventive maintenance activities at the LERF and 200 Area ETF. Equipment requiring maintenance is checked as indicated by the maintenance history and the manufacturer's recommendations. The preventive maintenance of certain equipment might not be possible if the LERF or the 200 Area ETF is in an operational mode. Thus, the preventive maintenance could be performed slightly earlier or later than planned to minimize impact on operations.

Instrumentation at 200 Area ETF is calibrated regularly to ensure accuracy and reliability. All process control instrumentation is calibrated on a schedule depending on previous calibration experience. An instrument calibration and recall system is employed to manage calibrations.

I.1.1.1 Types of Problems

Key components of the LERF inspection program include the following areas:

- Structural integrity of the basins
- Catch basin secondary containment system integrity
- Evidence of release from basins
- Safety, communications, and emergency equipment

Key components of the 200 Area 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

Table I.1 and Table I.2 provide a description of LERF and 200 Area ETF items to be inspected.

I.1.1.2 Frequency of Inspections

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.

The LERF and 200 Area ETF is inspected as indicated in Table I.1 and Table I.2.

I.1.2 Specific Process Inspection Requirements

The following sections describe the specific process inspections performed at LERF and 200 Area ETF.

I.1.2.1 Container Inspections

Containers are used at the 200 Area 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 container storage areas, 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.

I.1.2.2 Tank Inspections

A description of the tank systems and ancillary equipment at the 200 Area ETF is given in Addendum C. Inspections and frequencies are given in Table I.1 and Table I.2. This section includes a brief discussion of the inspections.

I.1.2.2.1 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.

I.1.2.2.2 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, secondary containment within the 200 Area ETF, surge tank, and verification tank, and associated secondary containment.

I.1.2.2.3 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 alarm 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).

I.1.2.2.4 Integrity Assessments

The initial integrity assessment was issued in 1995 (Addendum C). Consistent with the recommendations of the integrity assessment, a periodic integrity assessment program was developed for the 200 Area ETF tanks and is discussed in detail in Addendum C, Section C.4.2.

I.1.2.2.5 Effluent Treatment Facility Piping

The 200 Area ETF employs an extensive piping system. During inspections at the 200 Area 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.

I.1.2.3 Surface Impoundments and Condition Assessment

The following describes the surface impoundment inspections performed at LERF.

I.1.2.3.1 Overtopping Control

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 Addendum C.

I.1.2.3.2 Impoundment Contents

The LERF basins are inspected weekly to assess whether the contents are escaping from a basin. Level indicators are inspected weekly to check for unaccountable change in the level of the basins.

I.1.2.3.3 Leak Detection

The leachate detection, collection, and removal system is described in Addendum C. The leachate collection sump pump is activated automatically when the liquid level in the leachate sump reaches a preset level. A flow meter and totalizer measure the amount of leachate removed. An inspection is performed weekly where the totalizer reading and basin level reading are used to determine the leak rate per wetted surface area. The leak rate is compared to previous rates to see if leakage has increased.

The LERF employs a double walled transfer piping between 242-A Evaporator and LERF and between LERF and 200 Area ETF. The WAC 173-303-650 regulations do not require a discussion of piping for surface impoundments. However, for the purposes of comprehensive coverage of the LERF, inspections and integrity assessments are performed on the piping system. Aqueous waste (e.g., process condensate) is transferred from the 242-A Evaporator to the LERF via a buried pipeline. Likewise, aqueous waste is transferred to the 200 Area ETF via buried pipelines. At the LERF dikes, aboveground piping serves to transfer waste from one basin to another.

The buried pipelines normally are continuously monitored during transfers by a leak detection system (Addendum C). The alarms on the leak detection system are monitored in the 200 Area ETF control rooms. As an alternative to continuous leak detection, the transfer lines can be inspected daily during transfers by opening the secondary containment drain lines at the LERF catch basins (for 242-A Evaporator transfers to LERF) and the surge tank (for LERF transfers to 200 Area ETF) to inspect for leakage. During the routine inspections at LERF, the aboveground piping system is inspected 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.

I.1.2.3.4 Dike Erosion

The LERF basins and dikes are visually inspected weekly and after significant precipitation events for run-on, run-off, cover integrity, erosion problems, or other signs of deterioration in the dikes from precipitation, wind, burrowing mammals, or vegetation.

I.1.2.3.5 Structural Integrity

A written certification attesting to the structural integrity of the basin dikes, signed by a qualified, registered professional engineer, is provided in Addendum C.

I.1.2.3.6 Container Inspection

Normal operation of the LERF does not involve the storage of dangerous waste in containers. Therefore, the inspection requirements of this section normally are not applicable to the LERF. Any containerized dangerous waste generated at LERF will be brought to the 200 Area ETF and managed in accordance with WAC 173-303-630 and is discussed in Section I.1.3.

I.1.3 Inspection Log

Observations made and deficiencies noted during an inspection are recorded on inspection log sheets (also called turnover sheets). On completion, the log sheet includes the inspector's printed name, signature, date, and time; the log sheet is submitted for review and approval by LERF and200 Area ETF management or their designee, as required by operating procedures. Once approved, the log sheet is kept in the Hanford Facility Operating Record, LERF and 200 Area ETF files. Inspection records are retained in the Hanford Facility Operating Record, LERF and 200 Area ETF files, or other approved locations, in accordance with Permit Condition II.I.1. The inspection records are used to help determine any necessary corrective actions. Problems identified during the inspections are prioritized and addressed in a timely fashion to mitigate health risks to workers, maintain integrity of the TSD units, and prevent hazards to public health and the environment.

If while performing an inspection, a leak or spill is discovered, facility operations responds per the emergency response procedures action is taken to stop the leak and determine the cause. The waste is removed from the secondary containment in a timely manner that prevents harm to human health and the environment.

I.1.4 Storage of Ignitable or Reactive Wastes

The LERF could receive an aqueous waste that is designated reactive or ignitable. Any aqueous waste exhibiting these characteristics is managed (e.g., through blending in LERF) such that the waste no longer exhibits the reactive or ignitable characteristics.

Though unlikely, the 200 Area ETF secondary wastes might have the characteristics of being reactive or ignitable. A qualified inspector performs annual fire inspections of the 200 Area ETF using a checklist developed specifically for facilities that handle dangerous and/or mixed waste.

Table I.1. Visual Inspection Schedule for the LERF and 200 Area ETF

Item	Inspection	Frequency
Load-In Facility		
Load-In tank system	Inspect area for leaks. Note any unusual noises or vibration from the system pumps. Inspect secondary containment system for signs of deterioration.	Daily
Main Treatment Train		
Surge tank system	Inspect area for leaks. Note any unusual noises or vibration from the system pumps. Inspect secondary containment system for signs of deterioration.	Daily
Rough filter	Inspect for leaks.	Daily*
Ultraviolet oxidation system	Inspect module for leaks Inspect peroxide storage tank, ancillary equipment for leaks.	Daily*
pH adjustment tank	Inspect tank and ancillary equipment for leaks	Daily*
H_2O_2 decomposer	Inspect tank and ancillary equipment for leaks	Daily*
Fine filter	Inspect module for leaks	Daily*
Degasification system	Inspect module for leaks. Note any unusual noises or vibration from the degasification blower.	Daily*
Reverse osmosis system	Inspect tanks and ancillary equipment for leaks. Note any unusual noises or vibration from the system pumps.	Daily*
Polishers	Inspect tanks and ancillary equipment for leaks.	Daily*
Effluent pH adjustment tank	Inspect tank and ancillary equipment for leaks.	Daily*
Verification tanks	Inspect tanks and ancillary equipment for leaks. Note any unusual noises or vibration from the system pumps. Inspect secondary containment system for signs of deterioration.	Daily
Secondary Treatment Train		
Secondary waste receiving tank	Inspect tank and ancillary equipment for leaks	Daily
ETF evaporator	Inspect tank and equipment for leaks. Note any unusual noises or vibration from the system pumps or compressor.	Daily*
Concentrate tank	Inspect tank and ancillary equipment for leaks.	Daily*
Thin film dryer	Inspect tanks and ancillary equipment for leaks (viewed through camera). Note any unusual noises or vibration from the system pumps or blower.	Daily*
Container handling	Inspect area for spills, leaks, accumulated liquids.	Daily
Container handling	Inspect for deterioration of containers and secondary containment, including corrosion and cracks in secondary containment foundation and coating. Inspect container labels to ensure that they are readable.	Weekly
Support Systems		
Vessel ventilation system	Inspect filters (HEPA and pre-filters), check vessel off gas pressures, system flow, and discharge temperatures.	Daily
Sump tank system	Inspect sump trenches for unexpected liquids, which indicate spills or leaks from process equipment.	Daily
Safety Systems		
Eye wash stations	Check status; check for adequate pressure	Monthly
Safety showers	Check status; check for adequate pressure	Monthly
Emergency Systems		
Fire extinguishers	Check for adequate charge.	Monthly
Emergency lighting	Test operability.	Monthly
Processing Area		
Uninterruptible power supply	Check output voltage and visually inspect battery pack for corrosion and leakage. Check indicator lights for fault conditions.	Annually

Item	Inspection	Frequency
LERF (Surface Impoundment)		
LERF basins and dikes	Check to overtopping controls and integrity of the basins and dikes	Weekly
LERF contents	Check basin level indicators for unaccountable changes in the level of the basins	Weekly
Leak detections	Determine the leak rate per wetted surface area	Weekly
LERF basins and dikes	Check for run-on, run-off, cover integrity, erosion problems, and other signs of deterioration	Weekly & after significant precipitation events
Ignitable and Reactive		
Ignitable and reactive waste	Storage in compliance with Hanford Site fire protection standards and WAC 173-303-630(8)	Annually†
Container Storage Areas Other Than Secondary Treatment Train		
Container Storage	Container labels to ensure labels are not obscured, removed, or otherwise unreadable	Weekly
	Deterioration of containers, containment systems, or cracks in protective coating or foundations caused by corrosion, mishandling, or other factors	Weekly
	Leaks, spills, and accumulated liquids	Daily*

* Stated Inspection frequency to be performed only when system is in service during 200 Area ETF operations. HEPA – High efficiency particulate air

† When waste management activities occur

Table I.2. Inspection Plan for Instrumentation Monitoring

Item	Inspection	Frequency
Load-In Facility		
Level alarm LAHH-59A-109/-117	Monitor liquid level in load-in tanks TK-109 and TK-117 to prevent overflow	Continuously
Level alarm LSH-59A-003	Monitor liquid level in load-in tanks TK-1 to prevent overflow	Continuously
Leak detector	Monitor for leakage in the load-in tank pit sump	Continuously
Main Treatment Train		
Leak detector LAH-20B009	Monitor for leakage in the surge tank drainage sump	Continuously
Level alarm LAH-60A013	Monitor surge tank level to prevent overflow	Continuously
Level alarm LAHL-60C-111	Monitor liquid levels in the pH adjustment tank to prevent overflow	Continuously
Level alarm LAHL-60F-101	Monitor liquid levels in the first RO feed tank to prevent overflow	Continuously
Level alarm LAHL-60F-201	Monitor liquid levels in the second RO feed tank to prevent overflow	Continuously
Level alarms LAHL-60F-211	Monitor liquid levels in the effluent pH adjustment tank to prevent overflow	Continuously
Level transmitter LAHX-60H001A/B/C	Monitor liquid level in verification tanks to prevent overflow	Continuously
Leak detector LAH-20B010	Monitor for leakage in the verification tank drainage sump	Continuously
Secondary Treatment Train		
Level alarm LAHL-60I-001A/B	Monitor liquid levels in secondary waste receiver tanks A and B to prevent overflow.	Continuously
Level alarm LAHL-60J-001A/B	Monitor liquid levels in concentrate tanks A and B to prevent overflow.	Continuously
Level alarm LAHL-60I-107	Monitor liquid levels in the evaporator tank to prevent overflow.	Continuously
Level alarm LAHL-60J-036	Monitor liquid levels in the spray condenser tank to prevent overflow.	Continuously
Level alarm LAHL-60I-108	Monitor liquid levels in the distillate flash tank to prevent overflow.	Continuously
Level alarm LAH-60I-119	Monitor liquid levels in the entrainment separator tank to prevent overflow.	Continuously
Level transmitter LAH-20B001	Monitor liquid level in sump tank No. 1 to prevent overflow.	Continuously
Level transmitter LAH-20B002	Monitor liquid level in sump tank No. 2 to prevent overflow.	Continuously
Leak detector LAH-20B003	Monitor for leakage to sump No. 1.	Continuously*
Leak detector LAH-20B005	Monitor for leakage to sump No. 2.	Continuously*
Leak detector	Monitor for leakage from pipeline between 200 Area ETF and load in station.	Continuously*
Leak detector	Monitor for leakage from pipeline between 200 Area ETF and LERF.	Continuously*
Leak detector	Monitor for leakage from pipeline between LERF and the 242-A Evaporator.	Continuously*

*In the event of a malfunction of one of the electronic leak detectors, daily visual inspections will be performed while the facilities are in operation.

This page intentionally left blank.

Hanford Facility RCRA Permit Modification Notification Forms

Part III, Operating Unit 4

242-A Evaporator

Index

Page 2 of 15 Hanford Facility RCRA Permit III.4 Unit-Specific Conditions
Page 3 of 15 Chapter 1.0, Section VI
Page 4 of 15 Chapter 1.0, Section VII
Page 5 of 15 Chapter 1.0, Section VIII
Page 6 of 15 Chapter 1.0, Section X
Page 7 of 15 Chapter 1.0, Section XI
Page 8 of 15 Chapter 1.0, "*Comments*" Section
Page 9 of 15 Chapter 1.0, Tank C-100 Figure
Page 10 of 15 Chapter 3.0, Section 3.4
Page 11 of 15 Chapter 3.0, Section 3.5.3
Page 12 of 15 Chapter 3.0, Section 3.7
Page 13 of 15 Chapter 3.0, Section 3.7
Page 14 of 15 Chapter 3.0, Section 3.7.2
Page 15 of 15 Chapter 3.0, Table 3.5

Submitted by Co-Operator (WRPS):		Reviewed by DOE/ORP:	
Robert E. Wilkinson	3/21/14 Date	Thomas W. Fletcher	3/21/14 Date

Hanford Facility RCRA Permit Modification Notification Form	
Unit: **242-A Evaporator**	Permit Part **Part III, Operating Unit 4**

Description of Modification:
Hanford Facility RCRA Permit III.4:

PART III, OPERATING UNIT 4 UNIT-SPECIFIC CONDITIONS
242-A Evaporator

UNIT DESCRIPTION

The 242-A Evaporator is a mixed .....

III.4.A COMPLIANCE WITH UNIT SPECIFIC PERMIT CONDITIONS

The Permittees shall comply with .....

CHAPTERS SPECIFIC TO OPERATING UNIT GROUP 4:

Chapter 1.0	Part A Form, dated March 31, 2014 ~~October 1, 2008~~
Chapter 3.0	Waste Analysis Plan, dated March 31, 2014 ~~September 30, 2007~~
Chapter 4.0	Process Information, dated September 30, 2013
Appendix 4B	Tank Integrity Assessment, dated December 31, 2002
Chapter 5.0	Groundwater Monitoring, dated (not applicable)
Chapter 6.0	Procedures to Prevent Hazards, dated January 10, 2014 ~~June 30, 2010~~
Chapter 7.0	Contingency Plan, dated September 30, 2013
Chapter 8.0	Personnel Training, dated September 30, 2013
Chapter 11.0	Closure, dated September 30, 2013

WAC 173-303-830 Modification Class [1 2]	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1
Enter wording of WAC 173-303-830, Appendix I Modification citation: Administrative and informational changes. Changes are needed to update chapter revision dates.

Modification Approved: ☑ Yes ☐ No (state reason for denial)
Reason for denial:

Reviewed by Ecology:
S. L. Dahl-Crumpler 3-19-14 Date

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
242-A Evaporator	**Part III, Operating Unit 4**

Description of Modification:
Chapter 1.0, Section VI.

VI. Facility contact (Person to be contacted regarding waste activities at facility)		
Name (last)	**(first)**	
Smith~~Olinger~~	Kevin~~Shirley~~	
Job Title	**Phone Number (area code and number)**	
Manager	(509) 372-2315~~372-3062~~	
Contact Address		
Street or P.O. Box		
P.O. Box 450		
City or Town	**State**	**ZIP Code**
Richland	WA	99352

WAC 173-303-830 Modification Class [1 2]	Class 1	Class [1]1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1
Enter wording of WAC 173-303-830, Appendix I Modification citation: Administrative and informational changes.

Modification Approved: ☑ Yes ☐ No (state reason for denial)
Reason for denial:

Reviewed by Ecology:

S. L. Dahl-Crumpler — Date: 3-19-14

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
242-A Evaporator	**Part III, Operating Unit 4**

Description of Modification:
Chapter 1.0, Section VII

VII. Facility Operator Information			
A. Name			**Phone Number**
Department of Energy Owner/Operator Washington River Protection Solutions, LLC Co-Operator for 242-A Evaporator*			(509) 372-2315~~372-3062~~ (509) 372-9138*
Street or P.O. Box			
P.O. Box 450 P.O. Box 850*			
City or Town	**State**	**ZIP Code**	
Richland	WA	99352	
B. Operator Type	F		
C. Does the name in VII.A reflect a proposed change in operator?	☐ Yes ☒ No ~~Co-Operator* change~~		
If yes, provide the scheduled date for the change:	**Month**	**Day**	**Year**
	~~1~~ ~~0~~	~~0~~ ~~1~~	~~2~~ ~~0~~ ~~0~~ ~~8~~
D. Is the name listed in VII.A. also the owner? If yes, skip to Section VIII.C.	☐ Yes ☒ No		

WAC 173-303-830 Modification Class [1 2]	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1
Enter wording of WAC 173-303-830, Appendix I Modification citation: Administrative and informational changes.

Modification Approved: ☑ Yes ☐ No (state reason for denial)
Reason for denial:

Reviewed by Ecology:

S. L. Dahl-Crumpler — Date: 3-19-14

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
242-A Evaporator	**Part III, Operating Unit 4**

Description of Modification:
Chapter 1.0, Section VIII

VIII. Facility Owner Information		
A. Name	**Phone Number (area code and number)**	
~~Shirley J Olinger~~Kevin W. Smith, Operator/Facility-Property Owner	(509) 372-2315~~372-3062~~	
Street or P.O. Box		
P.O. Box 450		
City or Town	**State**	**ZIP Code**
Richland	WA	99352
B. Owner Type F		
C. Does the name in VIII.A reflect a proposed change in owner?	☐ Yes ☒ No	
If yes, provide the scheduled date for the change:	**Month**	**Day** / **Year**

WAC 173-303-830 Modification Class [1 2]	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1
Enter wording of WAC 173-303-830, Appendix I Modification citation: Administrative and informational changes.

Modification Approved: ☑ Yes ☐ No (state reason for denial)
Reason for denial:

Reviewed by Ecology:

S. L. Dahl-Crumpler — Date: 3-19-14

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
242-A Evaporator	**Part III, Operating Unit 4**

Description of Modification:
Chapter 1.0, Section X

X. Other Environmental Permits (see instructions)

A. Permit Type	B. Permit Number												C. Description
E	A	O	P	0	0	-	0	5	-	0	0	5	Title V Air Operating Permit
E	A	I	R	1 ~~0~~	2 4	-	3 ~~8~~	01	6 ~~2~~				FF-01 Approval Approval Date for AIR 12-306: 2/23/2012~~WAC 246-247, NOC Rad Air~~
~~E~~	~~T~~	~~S~~	~~C~~	~~A~~	~~0~~	~~6~~	~~-~~	~~0~~	~~8~~	~~-~~	~~0~~	4	~~40 CFR 761, TSCA RBDA Approval letter from L. J. Iani (EPA Region 10 Adminstator) to J. B. Hebdon and J. E. Rasmussen (DOE) dated 6/8/04~~
E	A	4	0	4	1								Petroleum Underground Storage Tank License

WAC 173-303-830 Modification Class [1 2]	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1
Enter wording of WAC 173-303-830, Appendix I Modification citation: Administrative and informational changes. Add reference to Air Operation Permit. List current FF-01 approval for 296-A-22. The TSCA Risk Based Disposal Approval is an approval letter, not a permit.

Modification Approved: ☑ Yes ☐ No (state reason for denial)
Reason for denial:

Reviewed by Ecology:

S. L. Dahl-Crumpler — Date: 3-19-14

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
242-A Evaporator	**Part III, Operating Unit 4**

Description of Modification:
Chapter 1.0, Section XI

XI. Nature of Business (provide a brief description that includes both dangerous waste and non-dangerous waste areas and activities)

The 242-A Evaporator is used to treat and store mixed waste from the DST System. Two waste streams leave the 242-A Evaporator following the treatment process: a concentrated slurry waste stream that is routed to the DST System; and a process condensate waste stream that is routed to the Liquid Effluent Retention Facility.

The waste fed to the 242-A Evaporator is regulated as a mixed waste with the same waste constituents as the waste in the DST System. The concentrated slurry is a characteristic waste (D001, D002, and D003), toxic waste (D004 through D011, D018, D019, D022, D028 through D030, D033 through D036, D038 through D041, and D043), nonspecific source waste (F001 through F005 and F039), and state-only characteristic waste (WT01, WT02, WP01, WP02. Multi-source leachate (F039) is included as a waste derived from nonspecific source waste F001 through F005.

The process condensate is regulated as a mixed waste due to the toxicity of ammonia (WT02) and because it is derived from the waste with a nonspecific source wastes F001 through F005. Multi-source leachate (F039) is included as a waste derived from nonspecific source waste F001 through F005.

The list of dangerous waste constituents under Section XIV.A includes constituents that have not been detected in the waste; however, knowledge of the processes providing the waste to the 242-A Evaporator indicates the strong possibility that these constituents are present in the waste or there is a potential for treating these constituents in the future. The annual waste quantity listed under Section XIV.B was calculated using an operating schedule of 365 days per year, a maximum pumping rate of 655 liters/minute (173 gpm), and a specific gravity of 2.0 for the waste. This calculation was done to provide a maximum estimate of annual waste quantity.

T04

The 242-A Evaporator began waste management operations in March of 1977. The 242-A Evaporator is located in the 200 East Area and is used to treat mixed waste from the Double-Shell Tank (DST) System by removing water and most volatile organics. Two waste streams leave the 242-A Evaporator following the treatment process. The first stream, the concentrated slurry (approximately 40 to 60 percent of the water is removed during evaporation along with a portion of volatile organics), is pumped back into the DST System. The second waste stream, process condensate (containing a portion of the volatile organics removed from the mixed waste during the evaporation process), is routed through condensate filters before release to a retention basin (Liquid Effluent Retention Facility). Off gasses from the process are routed through a de-entrainment unit, a prefilter, and high-efficiency particulate air filters before being discharged to the environment. The 242-A Evaporator is used to treat up to 943,000 liters (~249,000 gallons) of mixed waste per day, based on the 655 liters/minute (173) gpm capacity of the spare feed pump for AW-102.

S02

Tank TK-C-100, a 4.3-meter (14-foot) diameter by 5.9-meter (19-foot) high tank with a maximum design capacity of 67,380 liters (17,800 gallons) is located in the condensate room. Process condensate from the primary, inter-, and after-condensers drain by gravity to tank TK-C -100, which is constructed of stainless steel. In addition, tank TK-C-100 receives potentially contaminated drainage from the vessel vent system via a 102 -liter (27 gallon) seal pot.

WAC 173-303-830 Modification Class [1,2]	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1
Enter wording of WAC 173-303-830, Appendix I Modification citation: Administrative and informational changes. Changing "Tank-C-100" to "TK-C-100."

Modification Approved: ☑ Yes ☐ No (state reason for denial)
Reason for denial:

Reviewed by Ecology:

S. L. Dahl-Crumpler — Date: 3-19-14

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
242-A Evaporator	**Part III, Operating Unit 4**

Description of Modification:
Chapter 1.0, "*Comments*" Section

~~In Section VII, Facility Operator Information, there is no change to DOE as the Facility Owner/Operator; only a change in Co-Operator*. The change in Co-Operator* will be effective October 1, 2008.~~Changes from Revision 10 to 10A (modified 03/31/2014):

Section VI, "Facility Contact"

- Updated name and phone number of facility contact

Section VII, "Facility Operator Information"

- Updated phone number of facility contact
- Removed schedule for date as this revision is not a co-operator change

Section VIII, "Facility Owner Information"

- Updated name and phone number of facility owner

Section X, "Other Environmental Permits"

- Specifically named the Hanford Site Air Operating Permit (00-05-006) and FF-01 Approval
- Removed 40 CFR 761, TSCA RBDA Approval letter (EPA 10 Region Administrator) to J.B. Hebdon and J. E. Rasmussen, dated 6/8/04 as this is not a permit.

Section XI, "Nature of Business"

- Under S02, changed the name of "Tank-C-100" to "TK-C-100"

Figures

- Changed "Tank-C-100" to "TK-C-100" and "Process Condenser Pump P-G-100" to "Process Condensate Pump P-C-100" and added metric conversions alongside English units.

Comments

- Removed the following comment that coincided with a possible date change in section VII: "In Section VII, Facility Operator Information, there is no change to DOE as the Facility Owner/Operator; only a change in Co Operator*. The change in Co Operator* will be effective October 1, 2008."

WAC 173-303-830 Modification Class [1 2]	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1
Enter wording of WAC 173-303-830, Appendix I Modification citation: Administrative and informational changes. Summarizing modifications from Revision 10 to Revision 10A of the Part A Form.

Modification Approved: ☑ Yes ☐ No (state reason for denial)
Reason for denial:

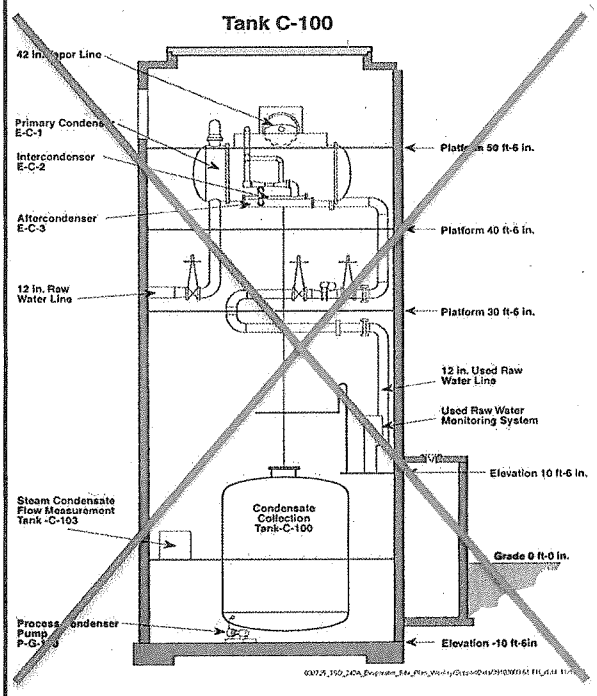
Reviewed by Ecology:

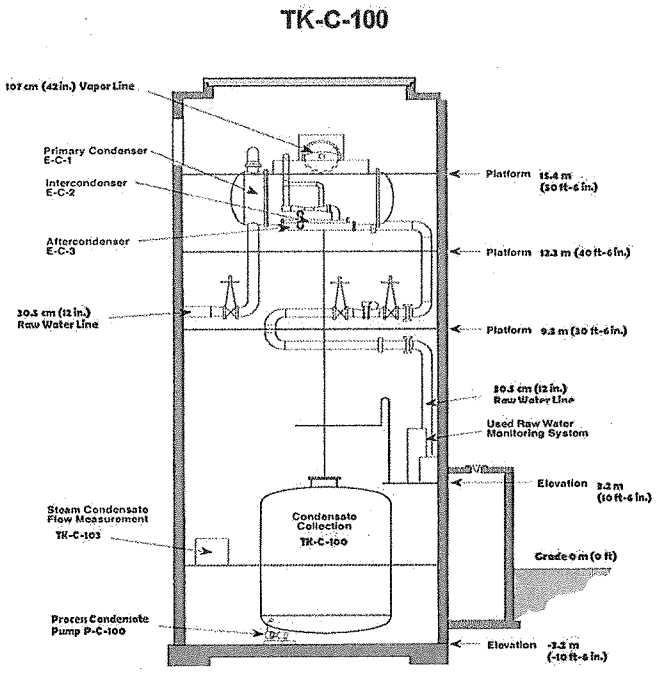
S. L. Dahl-Crumpler 3-19-14 Date

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
242-A Evaporator	**Part III, Operating Unit 4**

Description of Modification:
Chapter 1.0, Tank C-100 Figure





WAC 173-303-830 Modification Class [1,2]	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1
Enter wording of WAC 173-303-830, Appendix I Modification citation: Administrative and informational changes. Text changes only. No changes to equipment illustrated in figure. Changing "Tank-C-100" to "TK-C-100" and "Process Condenser Pump P-G-100" to "Process Condensate Pump P-C-100." Added metric conversions alongside English units.

Modification Approved: ☑ Yes ☐ No (state reason for denial)
Reason for denial:

Reviewed by Ecology:
S. L. Dahl-Crumpler — Date: 3-19-14

Hanford Facility RCRA Permit Modification Notification Form	
Unit: **242-A Evaporator**	Permit Part **Part III, Operating Unit 4**

Description of Modification:
Chapter 3.0, Section 3.4

3.4 242-A EVAPORATOR PROCESS DESCRIPTION

The 242-A Evaporator, located in the 200 East Area of the Hanford Site, separates the incoming waste from the DST System into two mixed waste aqueous streams the slurry and the process condensate as described in the following paragraph. The 242-A Evaporator also generates utility waste streams such as cooling water and steam condensate, which do not designate as dangerous waste. Description of the waste processed by the 242-A Evaporator is described in Section 3.5~~3.4~~.

The 242-A Evaporator process uses a conventional forced-circulation, vacuum evaporation system to concentrate mixed waste solutions from the DST System tanks. The incoming stream is separated by evaporation into two liquid streams: a concentrated slurry stream and a process condensate stream. The slurry contains the majority of the radionuclides and inorganic constituents. After the slurry is concentrated to the desired amount, the slurry stream is pumped back to the DST System and stored for further treatment. Vapor from the evaporation process is condensed, producing process condensate. The process condensate is transferred to LERF for storage and treatment. Vacuum for the evaporator vessel is provided by two steam jet ejectors. The 242-A Evaporator vessel vent stream is filtered and discharged through an exhaust stack. Figure 3.1 shows a simplified schematic of the 242-A Evaporator process. A more detailed description of the 242-A Evaporator process is provided in Chapter 4.0.

WAC 173-303-830 Modification Class [1,2]	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.2
Enter wording of WAC 173-303-830, Appendix I Modification citation: Correction of typographical errors. Incorrect reference. Required by Ecology in the January 10, 2014 Class 2 permit modification approval letter (14-NWP-008).

Modification Approved: [✓] Yes [ ] No (state reason for denial)
Reason for denial:

Reviewed by Ecology:

S. L. Dahl-Crumpler — Date: 3-19-14

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
242-A Evaporator	**Part III, Operating Unit 4**

Description of Modification:
Chapter 3.0, Section 3.5.3:

3.5.3 Dangerous Waste Numbers

The 242-A Evaporator is specifically designed to accept DST System waste directly from feed tank 241-AW-102. Waste acceptable for transfer to the 242-A Evaporator could be assigned any of the dangerous waste numbers found in Chapter 1.0, Part A, Form (latest Revision). These numbers are identical to the ones in the Part A, Form (latest Revision) for the DST System. Process knowledge and historical data indicate that the slurry stream returning to the DST System contains the same dangerous waste constituents as the waste feed, so the same dangerous waste numbers are applicable to the feed and slurry.

Table 3.1 lists the dangerous waste numbers assigned to the process condensate. The process condensate is designated with the dangerous waste numbers F001 to F005 because the process condensate is derived from treatment of DST System waste assigned these numbers.

Table 0.1. Waste Designation for Process Condensate.

Waste number	Characteristic/Source	Basis for designation
F001	Spent halogenated solvents	Derived from F001 waste
F002	Spent halogenated solvents	Derived from F002 waste
F003	Spent nonhalogenated solvents	Derived from F003 waste
F004	Spent nonhalogenated solvents	Derived from F004 waste
F005	Spent nonhalogenated solvents	Derived from F005 waste
F039	Multi-source leachate from waste disposal operations	Future receipt of waste with the F039 number, derived from F001 through F005.

The slurry waste stream generated at the 242-A Evaporator is also a mixed waste, but the slurry waste is not stored at the 242-A Evaporator, as it is transferred back to the DST system, and therefore not subject to the WAP. In addition to the ~~F001--F005~~ F001--F005 dangerous waste numbers, the slurry waste may designate for one or more applicable characteristic dangerous waste numbers.

WAC 173-303-830 Modification Class [1,2]	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.2
Enter wording of WAC 173-303-830, Appendix I Modification citation: Correction of typographical errors. Deletion of extra space. Required by Ecology in the January 10, 2014 Class 2 permit modification approval letter (14-NWP-008).

Modification Approved: ☑ Yes ☐ No (state reason for denial)
Reason for denial:

Reviewed by Ecology:

S. L. Dahnke Crumpler — Date: 3-19-14

Hanford Facility RCRA Permit Modification Notification Form	
Unit: **242-A Evaporator**	Permit Part **Part III, Operating Unit 4**

Description of Modification:
Chapter 3.0, Section 3.7:

3.7 CANDIDATE FEED TANK WASTE ACCEPTANCE PROCESS

Once possible feed candidate tanks have been identified, the method for determining if the waste in a candidate feed tank is acceptable for processing is followed. This section describes the waste acceptance process and Figure 3.2 provides an overall process flow.

WAC 173-303-830 Modification Class [1 2]	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1
Enter wording of WAC 173-303-830, Appendix I Modification citation: Administrative and informational changes. Need to call out Figure 3.2 and explanation in the text. Required by Ecology in the January 10, 2014 Class 2 permit modification approval letter (14-NWP-008).

Modification Approved: ☑ Yes ☐ No (state reason for denial) Reason for denial:	Reviewed by Ecology: S. L. Dahl-Crumpler — Date: 3-18-14

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
242-A Evaporator	**Part III, Operating Unit 4**

Description of Modification:
Chapter 3.0, Section 3.7:

The following activities are performed to determine if candidate waste feed will meet the 242-A Evaporator waste acceptance criteria.

- Perform a boil down study to evaluate the impacts of solids formation as specified in the Evaporator DQO (Banning 2009).
- Evaluate Potential for Energetics/Uncontrolled Chemical Reactions: There must be no exothermic reaction of waste constituents that occur below 168°C (335°F), and the ratio of exotherm-to-endotherm energy be less than 1.
- Evaluate Potential for Separable Organic Phase: Prior to operation of the evaporator, the absence of separable organics in the feed must be verified or managed to preclude transfer to the 242-A Evaporator.
- Calculate Process Condensate Ammonia and Organic Concentrations: Ammonia, and volatile organic concentrations are needed for the LERF waste profile sheet (refer to the Permit, Part III, LERF and 200 Area ETF, unit-specific conditions and Chapter 3.0, Waste Analysis Plan.)

WAC 173-303-830 Modification Class [1,2]	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.2
Enter wording of WAC 173-303-830, Appendix I Modification citation: Correction of typographical errors. Delete comma. Required by Ecology in the January 10, 2014 Class 2 permit modification approval letter (14-NWP-008).

Modification Approved: ☑ Yes ☐ No (state reason for denial)
Reason for denial:

Reviewed by Ecology:

S. L. Dahl-Crumpler — Date: 3-19-14

Hanford Facility RCRA Permit Modification Notification Form	
Unit: **242-A Evaporator**	Permit Part **Part III, Operating Unit 4**

Description of Modification:
Chapter 3.0, Section 3.7.2:

3.7.2 Candidate Feed Tank Sampling

After a candidate tank is selected, the waste in the tank is sampled and analyzed and the data evaluated to confirm waste acceptability through development of a Tank Sampling and Analysis Plan (Figure 3.2). Every candidate feed tank is sampled and analyzed to confirm waste acceptability. Sampling of a candidate feed tank waste for treatment in the 242-A Evaporator is performed according to the requirements of this WAP. The WAP reflects the rationale for determining the number of samples in the DQO (Banning 2009). The waste is sampled in the DST System, prior to transfer and acceptance at the 242-A Evaporator.

WAC 173-303-830 Modification Class [1 2]	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1
Enter wording of WAC 173-303-830, Appendix I Modification citation: Administrative and informational changes. Need to call out the sampling and analysis plan step of Figure 3.2. Required by Ecology in the January 10, 2014 Class 2 permit modification approval letter (14-NWP-008).

Modification Approved: [✓] Yes [ ] No (state reason for denial) Reason for denial:	Reviewed by Ecology: S. L. Dahl-Crumpler — Date: 3-19-14

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part
242-A Evaporator	**Part III, Operating Unit 4**

Description of Modification:
Chapter 3.0, Table 3.5

Table 3.5. Analytical Methods for Candidate Feed Tank Stream Analytes.

Category	Analyte	Performance-based analytical methods	Method
Organics	Acetone 1-Butanol 2-Butanone	Purge and trap and GC/MS (VOA)	SW-846 Method 8260
	2-Butoxyethanol Tri-butyl Phosphate	Solvent extraction and GC/MS (semi-VOA)	SW-846 Method 3520B and 8270A
Inorganic	Ammonia	Ion selective electrode and Micro-distillation Ion Chromatography	AWWA Method 4500-NH3 and EPA method 300.7
Other	Exotherm	Differential scanning calorimeter	A sample is placed in the DSC unit and heated to 500° C (932° F). The differential heat flow between the sample and a reference pan is monitored by thermocouples.
	Mixing and compatibility study	Lab specific	~~Solution from each sample are~~Representative samples of each candidate feed tank are mixed and visually checked for gas evolution, heat generation, precipitation, dissolution of solids, color change, clarity, and any other observable characteristics.

WAC 173-303-830 Modification Class [1,2]	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.2
Enter wording of WAC 173-303-830, Appendix I Modification citation: Correction of typographical errors. Aligning verb tense. More than one solution is used for mixing and compatibility. Required by Ecology in the January 10, 2014 Class 2 permit modification approval letter (14-NWP-008).

Modification Approved: ☑ Yes ☐ No (state reason for denial)
Reason for denial:

Reviewed by Ecology:
S. L. Dahl-Clumpler 3-19-14
Date

Remove and Replace the Following Sections:

Remove Unit-Specific Conditions, dated September 30, 2013, and replace with Unit-Specific Conditions dated March 31, 2014.

Remove Chapter 1.0, dated October 1, 2008, and replace with Chapter 1.0 dated March 31, 2014.

Remove Chapter 3.0, dated January 10, 2014, and replace with Chapter 3.0 dated March 31, 2014.

PART III, OPERATING UNIT 4 UNIT-SPECIFIC CONDITIONS

242-A Evaporator

UNIT DESCRIPTION

The 242-A Evaporator is a mixed waste treatment and storage unit consisting of a conventional forced-circulation, vacuum evaporation system to concentrate mixed-waste solutions located in the 200 East Area.

This document sets forth the operating conditions for the 242-A Evaporator.

III.4.A COMPLIANCE WITH UNIT SPECIFIC PERMIT CONDITIONS

The Permittees shall comply with all requirements set forth in the Hanford Facility RCRA Permit (Permit) as specified in Permit Attachment 9, Permit Applicability Matrix, including all approved modifications. All chapters, subsections, figures, tables, and appendices included in the following unit-specific Permit Conditions are enforceable in their entirety.

In the event that the Part III-Unit-Specific Conditions for Operating Unit 4, 242-A Evaporator conflict with the Part I-Standard Conditions and/or Part II-General Facility Conditions of the Permit, the unit-specific conditions for Operating Unit 4, 242-A Evaporator prevail.

CHAPTERS SPECIFIC TO OPERATING UNIT GROUP 4:

Chapter 1.0	Part A Form, dated March 31, 2014
Chapter 3.0	Waste Analysis Plan, dated March 31, 2014
Chapter 4.0	Process Information, dated September 30, 2013
Appendix 4B	Tank Integrity Assessment, dated December 31, 2002
Chapter 5.0	Groundwater Monitoring, dated (not applicable)
Chapter 6.0	Procedures to Prevent Hazards, dated January 10, 2014
Chapter 7.0	Contingency Plan, dated September 30, 2013
Chapter 8.0	Personnel Training, dated September 30, 2013
Chapter 11.0	Closure, dated September 30, 2013

III.4.B COMPLIANCE WITH UNIT-SPECIFIC PERMIT CONDITIONS

III.4.B.1 Portions of Permit Attachment 4 (DOE/RL-94-02) that are not made enforceable by inclusion in the applicability matrix for that document are not made enforceable by reference in this document.

This page intentionally left blank.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Dangerous Waste Permit Application Part A Form

Date Received	Reviewed by::	Date:	0	9	2	9	2	0	0	8
Month Day Year	Approved by::	Date:	0	9	2	9	2	0	0	8
0 9 2 5 2 0 0 8										

I. This form is submitted to: (place an "X" in the appropriate box)

☒	**Request modification to a final status permit (commonly called a "Part B" permit)**	
☐	**Request a change under interim status**	
☐	**Apply for a final status permit. This includes the application for the initial final status permit for a site or for a permit renewal (i.e., a new permit to replace an expiring permit).**	
☐	**Establish interim status because of the wastes newly regulated on:**	(Date)
	List waste codes:	

II. EPA/State ID Number

W A 7 8 9 0 0 0 8 9 6 7

III. Name of Facility

US Department of Energy – Hanford Facility

IV. Facility Location (Physical address not P.O. Box or Route Number)

A. Street

825 Jadwin

City or Town	State	ZIP Code
Richland	WA	99352

County Code (if known)	County Name
0 0 5	Benton

B. Land Type	C. Geographic Location Latitude (degrees, mins, secs)	Longitude (degrees, mins, secs)	D. Facility Existence Date Month Day Year
F	Refer to TOPO Map (Section XV.)		0 3 0 2 1 9 4 3

V. Facility Mailing Address

Street or P.O. Box

P.O. Box 450

City or Town	State	ZIP Code
Richland	WA	99352

VI. Facility contact (Person to be contacted regarding waste activities at facility)		
Name (last)	**(first)**	
Smith	Kevin	
Job Title	**Phone Number (area code and number)**	
Manager	(509) 372-2315	
Contact Address		
Street or P.O. Box		
P.O. Box 450		
City or Town	**State**	**ZIP Code**
Richland	WA	99352

VII. Facility Operator Information	
A. Name	**Phone Number**
Department of Energy Owner/Operator Washington River Protection Solutions, LLC Co-Operator for 242-A Evaporator*	(509) 372-2315 (509) 372-9138*
Street or P.O. Box	
P.O. Box 450 P.O. Box 850*	

City or Town	**State**	**ZIP Code**
Richland	WA	99352

B. Operator Type	F

C. Does the name in VII.A reflect a proposed change in operator?	☐ Yes ☒ No
If yes, provide the scheduled date for the change:	**Month** / **Day** / **Year**
D. Is the name listed in VII.A. also the owner? If yes, skip to Section VIII.C.	☐ Yes ☒ No

VIII. Facility Owner Information	
A. Name	**Phone Number (area code and number)**
Kevin W. Smith, Operator/Facility-Property Owner	(509) 372-2315
Street or P.O. Box	
P.O. Box 450	

City or Town	**State**	**ZIP Code**
Richland	WA	99352

B. Owner Type	F

C. Does the name in VIII.A reflect a proposed change in owner?	☐ Yes ☒ No
If yes, provide the scheduled date for the change:	**Month** / **Day** / **Year**

IX. NAICS Codes (5/6 digit codes)													
A. First							**B. Second**						
5	6	2	2	1		Waste Treatment & Disposal	9	2	4	1	1	0	Administration of Air & Water Resource & Solid Waste Management Programs
C. Third							**D. Fourth**						
5	4	1	7	1		Research & Development in the Physical, Engineering, & Life Sciences							

X. Other Environmental Permits (see instructions)

A. Permit Type	B. Permit Number	C. Description
E	AOP00-05-005	Title V Air Operating Permit
E	AIR12-306	FF-01 Approval Approval Date for AIR 12-306: 2/23/2012
E	A4041	Petroleum Underground Storage Tank License

XI. Nature of Business (provide a brief description that includes both dangerous waste and non-dangerous waste areas and activities)

The 242-A Evaporator is used to treat and store mixed waste from the DST System. Two waste streams leave the 242-A Evaporator following the treatment process: a concentrated slurry waste stream that is routed to the DST System; and a process condensate waste stream that is routed to the Liquid Effluent Retention Facility.

The waste fed to the 242-A Evaporator is regulated as a mixed waste with the same waste constituents as the waste in the DST System. The concentrated slurry is a characteristic waste (D001, D002, and D003), toxic waste (D004 through D011, D018, D019, D022, D028 through D030, D033 through D036, D038 through D041, and D043), nonspecific source waste (F001 through F005 and F039), and state-only characteristic waste (WT01, WT02, WP01, WP02. Multi-source leachate (F039) is included as a waste derived from nonspecific source waste F001 through F005.

The process condensate is regulated as a mixed waste due to the toxicity of ammonia (WT02) and because it is derived from the waste with a nonspecific source wastes F001 through F005. Multi-source leachate (F039) is included as a waste derived from nonspecific source waste F001 through F005.

The list of dangerous waste constituents under Section XIV.A includes constituents that have not been detected in the waste; however, knowledge of the processes providing the waste to the 242-A Evaporator indicates the strong possibility that these constituents are present in the waste or there is a potential for treating these constituents in the future. The annual waste quantity listed under Section XIV.B was calculated using an operating schedule of 365 days per year, a maximum pumping rate of 655 liters/minute (173 gpm), and a specific gravity of 2.0 for the waste. This calculation was done to provide a maximum estimate of annual waste quantity.

T04

The 242-A Evaporator began waste management operations in March of 1977. The 242-A Evaporator is located in the 200 East Area and is used to treat mixed waste from the Double-Shell Tank (DST) System by removing water and most volatile organics. Two waste streams leave the 242-A Evaporator following the treatment process. The first stream, the concentrated slurry (approximately 40 to 60 percent of the water is removed during evaporation along with a portion of volatile organics), is pumped back into the DST System. The second waste stream, process condensate (containing a portion of the volatile organics removed from the mixed waste during the evaporation process), is routed through condensate filters before release to a retention basin (Liquid Effluent Retention Facility). Off gasses from the process are routed through a de-entrainment unit, a prefilter, and high-efficiency particulate air filters before being discharged to the environment. The 242-A Evaporator is used to treat up to 943,000 liters (~249,000 gallons) of mixed waste per day, based on the 655 liters/minute (173) gpm capacity of the spare feed pump for AW-102.

S02

Tank TK-C-100, a 4.3-meter (14-foot) diameter by 5.9-meter (19-foot) high tank with a maximum design capacity of 67,380 liters (17,800 gallons) is located in the condensate room. Process condensate from the primary, inter-, and after-condensers drain by gravity to tank TK-C -100, which is constructed of stainless steel. In addition, tank TK-C-100 receives potentially contaminated drainage from the vessel vent system via a 102 -liter (27 gallon) seal pot.

Tank C-A-1 is located in the evaporator room and consists of two sections: the lower (liquid) section, a 4.3-meter (14-foot) diameter stainless steel shell, and an upper (vapor) section, a 3.5-meter (11.6-foot) diameter stainless steel shell, containing two wire-mesh de-entrainment pads for the removal of liquids and solids that could be carried into the vapor header. Process slurry from the reboiler discharges to the evaporator vessel (tank C-A-1). Concentrated process slurry exits the lower section of tank C-A-1 via the 28-inch recirculating line. Vapor flows out of tank C-A-1 through a 42-inch vapor line at the top. The maximum design capacity of tank C-A-1 is 103,217 liters (27,267 gallons).

EXAMPLE FOR COMPLETING ITEMS XII and XIII (shown in lines numbered X-1, X-2, and X-3 below): A facility has two storage tanks that hold 1200 gallons and 400 gallons respectively. There is also treatment in tanks at 20 gallons/hr. Finally, a one-quarter acre area that is two meters deep will undergo *in situ vitrification.*

Section XII. Process Codes and Design Capacities								Section XIII. Other Process Codes								
Line Number		A. Process Codes (enter code)			B. Process Design Capacity		C. Process Total Number of Units	Line Number		A. Process Codes (enter code)			B Process Design Capacity		C. Process Total Number of Units	D. Process Description
					1. Amount	2. Unit of Measure (enter code)							1. Amount	2. Unit of Measure (enter code)		
X	1	S	0	2	1,600	G	002	X	1	T	0	4	700	C	001	In situ vitrification
X	2	T	0	3	20	E	001									
X	3	T	0	4	700	C	001									
	1	T	0	4	943,000	V	001		1							
	2	S	0	2	170,597	L	002		2							
	3								3							
	4								4							
	5								5							
	6								6							
	7								7							
	8								8							
	9								9							
1	0							1	0							
1	1							1	1							
1	2							1	2							
1	3							1	3							
1	4							1	4							
1	5							1	5							
1	6							1	6							
1	7							1	7							
1	8							1	8							
1	9							1	9							
2	0							2	0							
2	1							2	1							
2	2							2	2							
2	3							2	3							
2	4							2	4							
2	5							2	5							

XIV. Description of Dangerous Wastes

Example for completing this section: A facility will receive three non-listed wastes, then store and treat them on-site. Two wastes are corrosive only, with the facility receiving and storing the wastes in containers. There will be about 200 pounds per year of each of these two wastes, which will be neutralized in a tank. The other waste is corrosive and ignitable and will be neutralized then blended into hazardous waste fuel. There will be about 100 pounds per year of that waste, which will be received in bulk and put into tanks.

Line Number	A. Dangerous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Processes									
							(1) Process Codes (enter)									(2) Process Description [If a code is not entered in D (1)]
X 1	**D**	**0**	**0**	**2**	**400**	**P**	**S**	**0**	**1**	**T**	**0**	**1**				
X 2	**D**	**0**	**0**	**1**	**100**	**P**	**S**	**0**	**2**	**T**	**0**	**1**				
X 3	**D**	**0**	**0**	**2**												**Included with above**
1	D	0	0	1	687,702,298	K	T	0	4							
2	D	0	0	2		K	T	0	4							
3	D	0	0	3		K	T	0	4							
4	D	0	0	4		K	T	0	4							
5	D	0	0	5		K	T	0	4							
6	D	0	0	6		K	T	0	4							
7	D	0	0	7		K	T	0	4							
8	D	0	0	8		K	T	0	4							
9	D	0	0	9		K	T	0	4							
10	D	0	1	0		K	T	0	4							
11	D	0	1	1		K	T	0	4							
12	D	0	1	8		K	T	0	4							
13	D	0	1	9		K	T	0	4							
14	D	0	2	2		K	T	0	4							
15	D	0	2	8		K	T	0	4							
16	D	0	2	9		K	T	0	4							
17	D	0	3	0		K	T	0	4							
18	D	0	3	3		K	T	0	4							
19	D	0	3	4		K	T	0	4							
20	D	0	3	5		K	T	0	4							
21	D	0	3	6		K	T	0	4							
22	D	0	3	8		K	T	0	4							
23	D	0	3	9		K	T	0	4							
24	D	0	4	0		K	T	0	4							
25	D	0	4	1		K	T	0	4							

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Line Number	A. Dangerous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Process									
							(1) Process Codes (enter)									(2) Process Description [If a code is not entered in D (1)]
26	D	0	4	3		K	T	0	4							
27	W	T	0	1		K	T	0	4							
28	W	T	0	2		K	T	0	4							
29	W	P	0	1		K	T	0	4							
30	W	P	0	2		K	T	0	4							
31	F	0	0	1		K	T	0	4							
32	F	0	0	2		K	T	0	4							
33	F	0	0	3		K	T	0	4							
34	F	0	0	4		K	T	0	4							
35	F	0	0	5		K	T	0	4							
36	F	0	3	9		K	T	0	4							
37	D	0	0	1	348,241	K	S	0	2							
38	D	0	0	2		K	S	0	2							
39	D	0	0	3		K	S	0	2							
40	D	0	0	4		K	S	0	2							
41	D	0	0	5		K	S	0	2							
42	D	0	0	6		K	S	0	2							
43	D	0	0	7		K	S	0	2							
44	D	0	0	8		K	S	0	2							
45	D	0	0	9		K	S	0	2							
46	D	0	1	0		K	S	0	2							
47	D	0	1	1		K	S	0	2							
48	D	0	1	8		K	S	0	2							
49	D	0	1	9		K	S	0	2							
50	D	0	2	2		K	S	0	2							
51	D	0	2	8		K	S	0	2							
52	D	0	2	9		K	S	0	2							
53	D	0	3	0		K	S	0	2							
54	D	0	3	3		K	S	0	2							
55	D	0	3	4		K	S	0	2							
56	D	0	3	5		K	S	0	2							
57	D	0	3	6		K	S	0	2							
58	D	0	3	8		K	S	0	2							
59	D	0	3	9		K	S	0	2							
60	D	0	4	0		K	S	0	2							
61	D	0	4	1		K	S	0	2							
62	D	0	4	3		K	S	0	2							
63	W	T	0	1		K	S	0	2							
64	W	T	0	2		K	S	0	2							
65	W	P	0	1		K	S	0	2							

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Line Number	A. Dangerous Waste No. (enter code)				B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Process									
							(1) Process Codes (enter)									(2) Process Description [If a code is not entered in D (1)]
66	W	P	0	2		K	S	0	2							
67	F	0	0	1		K	S	0	2							
68	F	0	0	2		K	S	0	2							
69	F	0	0	3		K	S	0	2							
70	F	0	0	4		K	S	0	2							
71	F	0	0	5		K	S	0	2							
72	F	0	3	9		K	S	0	2							
73																
74																
75																
76																
77																
78																
79																
80																
81																
82																
83																
84																
85																
86																
87																
88																
89																
90																
91																
92																
93																
94																
95																
96																
97																
98																
99																
100																

XV. Map

Attach to this application a topographic map of the area extending to at least one (1) mile beyond property boundaries. The map must show the outline of the facility; the location of each of its existing and proposed intake and discharge structures; each of its dangerous waste treatment, storage, recycling, or disposal units; and each well where fluids are injected underground. Include all springs, rivers, and other surface water bodies in this map area, plus drinking water wells listed in public records or otherwise known to the applicant within ¼ mile of the facility property boundary. The instructions provide additional information on meeting these requirements.

Topographic map is located in the Ecology Library

XVI. Facility Drawing

All existing facilities must include a scale drawing of the facility (refer to Instructions for more detail).

XVII. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, recycling, and disposal areas; and sites of future storage, treatment, recycling, or disposal areas (refer to Instructions for more detail).

XVIII. Certifications

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Operator Name and Official Title (type or print) Shirley J. Olinger, Manager U.S. Department of Energy Office of River Protection	**Signature**	**Date Signed** 9/15/08
Co-Operator* Name and Official Title (type or print) William J. Johnson President and Project Manager Washington River Protection Solutions, LLC	**Signature**	**Date Signed** 9/09/08
Co-Operator – Address and Telephone Number* P.O. Box 850 Richland, WA 99352 (509) 372-9138		
Facility-Property Owner Name and Official Title (type or print) Shirley J. Olinger, Manager U.S. Department of Energy Office of River Protection	**Signature**	**Date Signed** 9/15/08

Comments

Changes from Revision 10 to 10A (modified 03/31/2014):

Section VI, "Facility Contact"

- Updated name and phone number of facility contact

Section VII, "Facility Operator Information"

- Updated phone number of facility contact
- Removed schedule for date as this revision is not a co-operator change

Section VIII, "Facility Owner Information"

- Updated name and phone number of facility owner

Section X, "Other Environmental Permits"

- Specifically named the Hanford Site Air Operating Permit (00-05-006) and FF-01 Approval
- Removed 40 CFR 761, TSCA RBDA Approval letter (EPA 10 Region Administrator) to J.B. Hebdon and J. E. Rasmussen, dated 6/8/04 as this is not a permit.

Section XI, "Nature of Business"

- Under S02, changed the name of "Tank-C-100" to "TK-C-100"

Figures

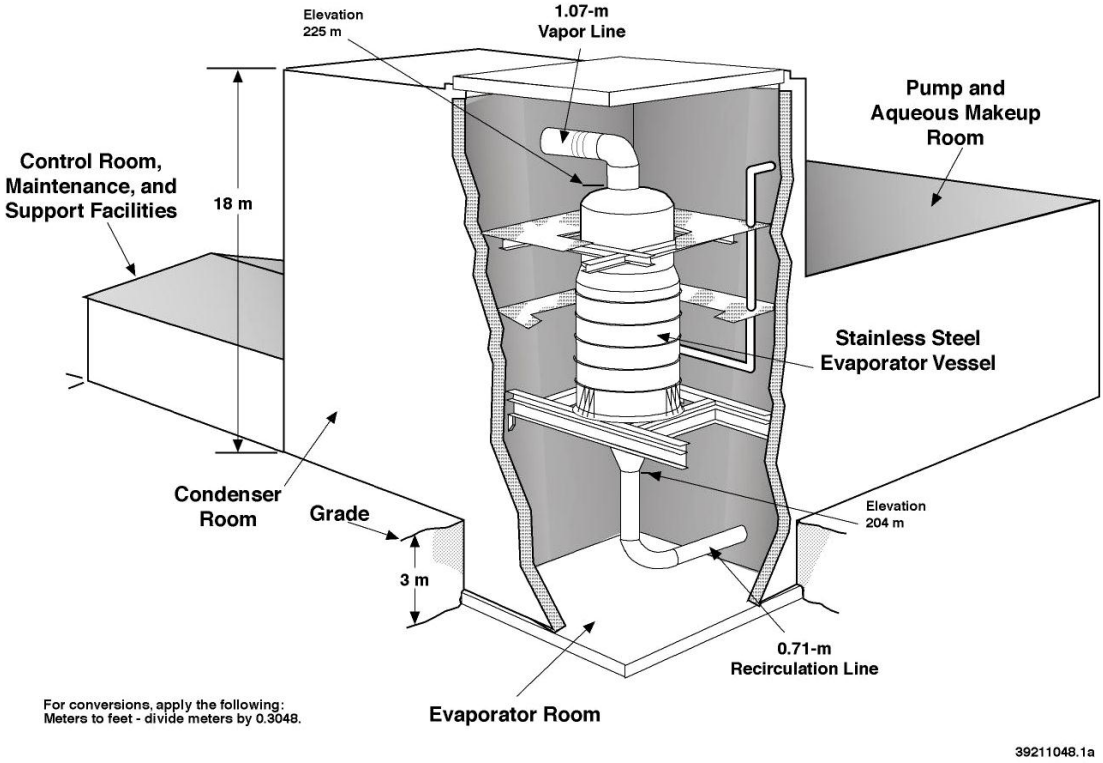
- Changed "Tank-C-100" to "TK-C-100" and "Process Condenser Pump P-G-100" to "Process Condensate Pump P-C-100" and added metric conversions alongside English units.

Comments

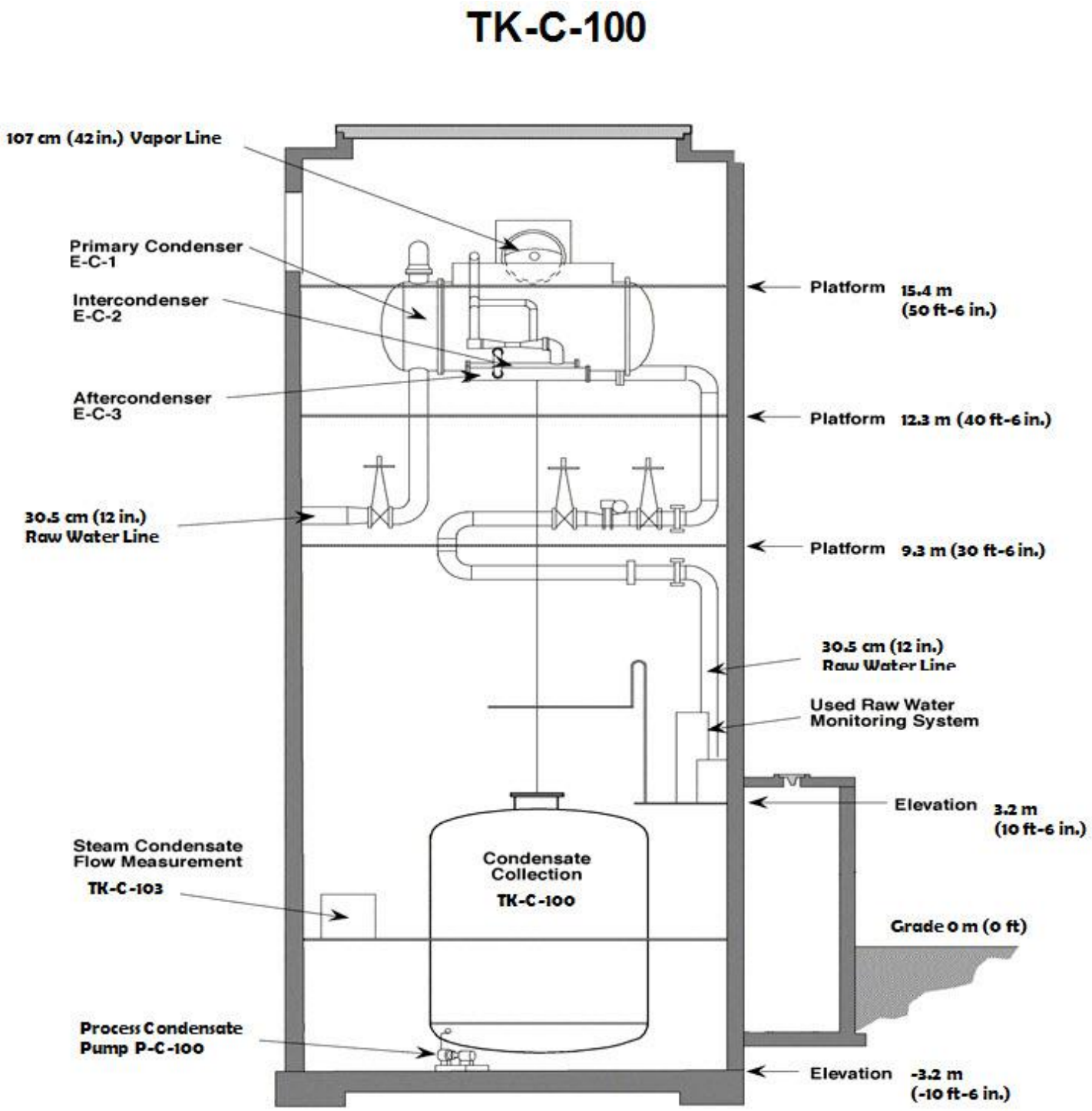
- Removed the following comment that coincided with a possible date change in section VII: "In Section VII, Facility Operator Information, there is no change to DOE as the Facility Owner/Operator; only a change in Co Operator*. The change in Co Operator* will be effective October 1, 2008."

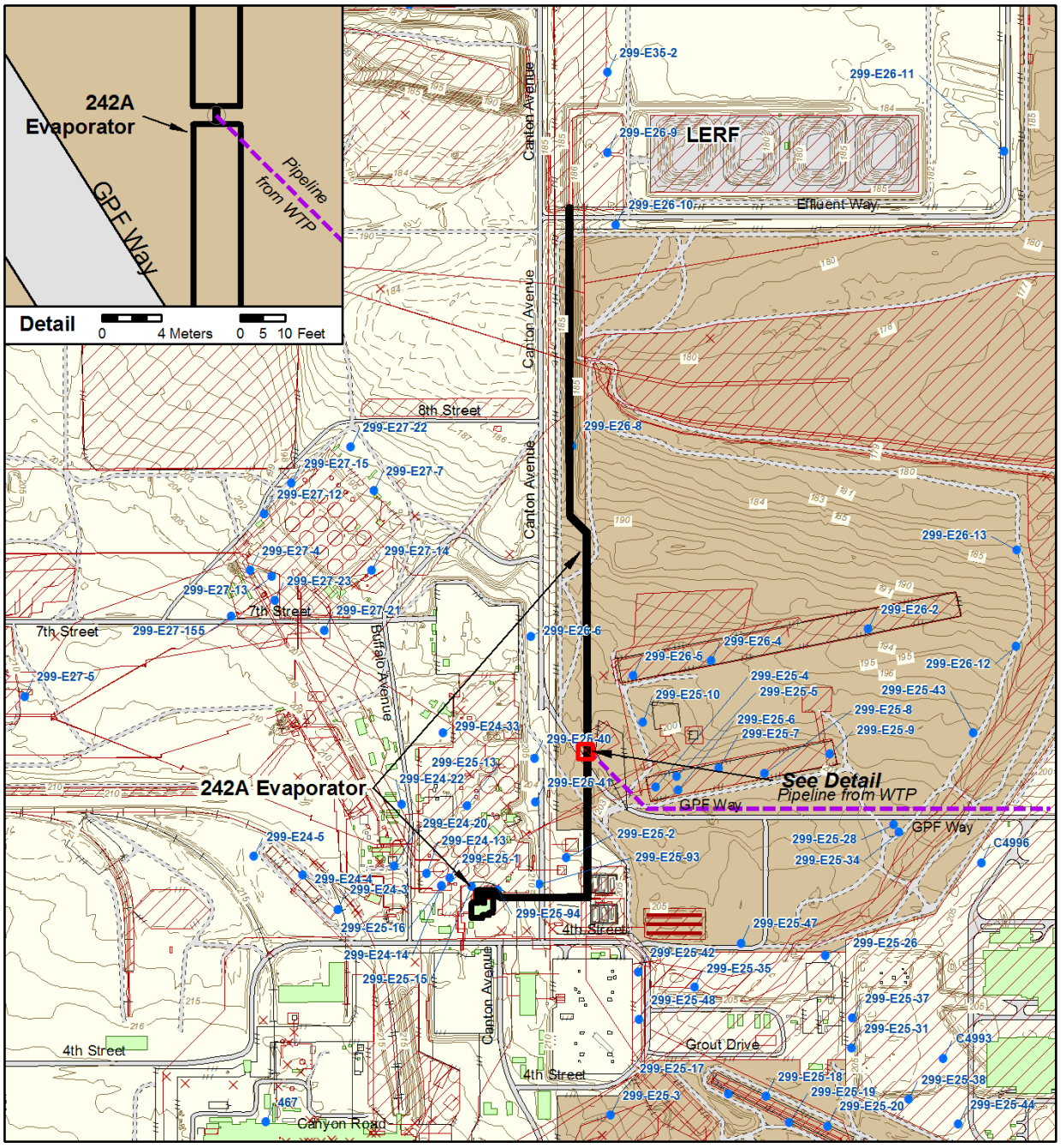
242-A Evaporator

96080579-19CN
Photo Taken 1996



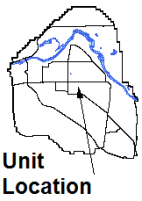
242-A Evaporator





242A Evaporator

Hanford Site



Prepared for:
US DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
Created and Published by:
Central Mapping Services
Fluor Hanford, Richland, WA
(509) 373-9076
INTENDED USE: REFERENCE ONLY

- TSD Unit Boundary
- DOE Operating Areas
- Hanford Facility
- Injection and Withdrawal Wells
- Contours at 1 Meter Intervals
- Depression Contours
- SWMUs and Known Releases
- Linear SWMUs and Known Releases
- Spot SWMUs and Known Releases
- Buildings
- Structures
- Concrete
- Major Roads
- Service Roads
- Railroads
- Fences

Meters: 0 100 200 300
Feet: 0 200 400 600 800 1,000

O:\Projects\2004\RCRA_TSD\041102_Top10FacilityTopos2005_Bowman\Maps\050331_242AEvaporator_LineDwg_85x11_Rev2.mxd - 7/10/2008 @ 1:38:39 PM

Chapter 3.0 **Waste Analysis Plan**

3.0 WASTE ANALYSIS PLAN 3.1
3.1 INTRODUCTION 3.1
3.2 PURPOSE 3.1
3.3 SCOPE 3.1
3.4 242-A EVAPORATOR PROCESS DESCRIPTION 3.2
3.5 WASTE IDENTIFICATION 3.2
3.5.1 General Constituent Description 3.3
3.5.2 Classification of Waste 3.5
3.5.3 Dangerous Waste Numbers 3.5
3.6 WASTE ACCEPTANCE PROCESS 3.5
3.7 CANDIDATE FEED TANK WASTE ACCEPTANCE PROCESS 3.6
3.7.1 Selecting Candidate Feed Tanks 3.7
3.7.2 Candidate Feed Tank Sampling 3.7
3.7.3 Assessing Candidate Feed Tank Sampling and Analysis Results 3.7
3.8 SAMPLING PROCESS FOR DANGEROUS WASTES GENERATED FROM TREATMENT 3.8
3.8.1 Determining the Number of Process Condensate Samples 3.8
3.8.2 Assessing Process Condensate Sampling and Analysis Results 3.8
3.9 242-A EVAPORATOR WASTE ACCEPTANCE CRITERIA 3.8
3.9.1 3.9.1 Candidate Feed Tank Waste Acceptance Criteria 3.9
3.9.1.1 Exothermic Reactions 3.9
3.9.1.2 Compatibility 3.10
3.9.1.3 Separable Organics 3.10
3.9.1.4 Organic Constituents 3.10
3.9.2 Process Condensate Waste Acceptance Criteria 3.11
3.10 SAMPLE COLLECTION AND ANALYSIS 3.12
3.10.1 Sample Collection 3.12
3.10.1.1 Candidate Feed Tank Sample Collection 3.12
3.10.1.2 Candidate Feed Tank Sampling Quality Assurance and Quality Control 3.12
3.10.1.3 Deviations from Specified Sampling Practices 3.13
3.10.1.4 Process Condensate Sample Collection 3.14
3.10.1.5 Process Condensate Sampling Quality Assurance and Quality Control 3.14
3.10.2 Analyte Selection and Rationale 3.14
3.11 ANALYTICAL METHODS AND QUALITY ASSURANCE AND QUALITY CONTROL 3.15
3.11.1 Laboratory Selection 3.16
3.11.2 Analytical Methods 3.16
3.11.3 Laboratory Quality Assurance and Quality Control 3.16
3.12 REFERENCES 3.18

Figures

Figure 3.1. 242-A Evaporator Simplified Schematic 3.4
Figure 3.2. 242-A Evaporator Waste Acceptance Process 3.9

Tables

Table 3.1. Waste Designation for Process Condensate..... 3.55
Table 3.2. Candidate Feed Tank Limits for Vessel Vent Organic Discharge. 3.119
Table 3.3. Candidate Feed Tank Sample Point Selection. 3.155
Table 3.4. Analytes for Candidate Feed Tanks..... 3.155
Table 3.5. Analytical Methods for Candidate Feed Tank Stream Analytes. 3.17
Table 3.6. Quality Assurance Requirements for Candidate Feed Tank Stream Analytes 3.188

GLOSSARY

ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
CAS#	Chemical Abstract Service Number
CFR	Code of Federal Regulations
C_T	total carbon
DOE	U. S. Department of Energy
DQO	data quality objective
DSC	differential scanning calorimeter
DST	Double-Shell Tanks
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ETF	200 Area Effluent Treatment Facility
GC	gas chromatography
HDPE	high-density polyethylene
IC_T	total inorganic carbon
IR	infrared
LERF	Liquid Effluent Retention Facility
MS	mass spectrometry
N/A	not applicable
QA	quality assurance
QC	quality control
RCRA	*Resource Conservation and Recovery Act of 1976*
RPD	relative percent difference
TGA	Thermogravimetric analysis
TOC	total organic carbon
TSD	treatment, storage, and/or disposal
VOA	volatile organic analysis
WAC	Washington Administrative Code
WAP	waste analysis plan

METRIC CONVERSION CHART

Into metric units			Out of metric units		
If you know	Multiply by	To get	If you know	Multiply by	To get
Length			**Length**		
inches	25.40	millimeters	millimeters	0.0393	inches
inches	2.54	centimeters	centimeters	0.393	inches
feet	0.3048	meters	meters	3.2808	feet
yards	0.914	meters	meters	1.09	yards
miles	1.609	kilometers	kilometers	0.62	miles
Area			**Area**		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.092	square meters	square meters	10.7639	square feet
square yards	0.836	square meters	square meters	1.20	square yards
square miles	2.59	square kilometers	square kilometers	0.39	square miles
acres	0.404	hectares	hectares	2.471	acres
Mass (weight)			**Mass (weight)**		
ounces	28.35	grams	grams	0.0352	ounces
pounds	0.453	kilograms	kilograms	2.2046	pounds
short ton	0.907	metric ton	metric ton	1.10	short ton
Volume			**Volume**		
fluid ounces	29.57	milliliters	milliliters	0.03	fluid ounces
quarts	0.95	liters	liters	1.057	quarts
gallons	3.79	liters	liters	0.26	gallons
cubic feet	0.03	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.76456	cubic meters	cubic meters	1.308	cubic yards
Temperature			**Temperature**		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit
Force			**Force**		
pounds per square inch	6.895	kilopascals	kilopascals	0.14504	pounds per square inch

Source: *Engineering Unit Conversions*, M. R. Lindeburg, P.E., Second Ed., 1990, Professional Publications, Inc., Belmont, California.

3.0 WASTE ANALYSIS PLAN

3.1 INTRODUCTION

This waste analysis plan (WAP) addresses analysis necessary to manage the waste at the 242-A Evaporator according to requirements included in the *Hanford Facility Resource Conservation and Recovery Act, Dangerous Waste Portion, Permit*, WA7 89000 8967 (Permit), and Washington Administrative Code (WAC), Chapter 173-303.

Modifications of the WAP require modifications of the Permit. Permit modifications are discussed in Permit Condition I.C and WAC 173-303-830.

Where information regarding treatment, management, and disposal of the radioactive source byproduct material and/or special nuclear components of mixed waste (as defined by the Atomic Energy Act of 1954 as amended) has been incorporated into this document, it is not incorporated for the purpose of regulating the radiation hazards of such components under the authority of this Permit or chapter 70.105 RCW and its implementing regulations but is provided for information purposes only.

3.2 PURPOSE

The purpose of the WAP is to ensure waste at the 242-A Evaporator is managed properly in accordance with WAC 173-303-300. To ensure the waste analysis is comprehensive, a data quality objectives (DQO) analysis was performed on all streams at the 242-A Evaporator. Sampling and analysis identified in the DQO analysis related to meeting RCRA requirements are included as an integral part of this WAP.

Regulatory and safety issues are addressed in the WAP by establishing boundary conditions for waste to be received and treated at the 242-A Evaporator. The boundary conditions are set by establishing limits for items such as reactivity, waste compatibility, and control of vessel vent organic emissions. Waste that exceeds the boundary conditions would not be acceptable for processing without further actions, such as blending with other waste. In some cases, individual waste streams not acceptable at the 242-A Evaporator may be pre-treated or blended with other compatible waste streams to meet the 242-A waste acceptance criteria. Such pre-treatment or blending, however, would occur at dangerous waste management unit(s) other than the 242-A Evaporator.

3.3 SCOPE

This WAP discusses sampling and analysis of waste to determine the acceptability of the waste in ‘candidate feed tank(s)’ for processing at the 242-A Evaporator and characterization of dangerous waste streams generated from the treatment process. A ‘candidate feed tank(s)’ means one or more tanks in the Double Shell Tank (DST) System, and is typically not the feed tank (241-AW-102). Refer to additional discussion in Section 3.5 for ‘candidate feed tanks.’

- **Candidate Feed Tank Acceptance Process** – This process determines the acceptability of DST System waste at the 242-A Evaporator operating capabilities prior to acceptance of the waste at the 242-A Evaporator for treatment. Refer to Section 3.7.
- **Dangerous waste generated from the treatment process** – Sampling and analysis is used to characterize the process condensate waste stream generated from the treatment process. The process condensate is transferred to the Liquid Effluent Retention Facility (LERF). Sampling can be performed either at the 242-A Evaporator or at LERF. A discussion of process condensate sampling at the 242-A Evaporator is included in this WAP, while discussion of process condensate sampling at

LERF is included in the Permit, Part III, Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility, *Waste Analysis Plan*. Refer to Section 3.8.

- Samples of other 242-A Evaporator waste streams, such as steam condensate, cooling water, and 242-A-81 back flush water, are taken as required for process control but are excluded from this plan because these streams have been previously characterized and determined to be nondangerous waste streams.

3.4 242-A EVAPORATOR PROCESS DESCRIPTION

The 242-A Evaporator, located in the 200 East Area of the Hanford Site, separates the incoming waste from the DST System into two mixed waste aqueous streams the slurry and the process condensate as described in the following paragraph. The 242-A Evaporator also generates utility waste streams such as cooling water and steam condensate, which do not designate as dangerous waste. Description of the waste processed by the 242-A Evaporator is described in Section 3.5.

The 242-A Evaporator process uses a conventional forced-circulation, vacuum evaporation system to concentrate mixed waste solutions from the DST System tanks. The incoming stream is separated by evaporation into two liquid streams: a concentrated slurry stream and a process condensate stream. The slurry contains the majority of the radionuclides and inorganic constituents. After the slurry is concentrated to the desired amount, the slurry stream is pumped back to the DST System and stored for further treatment. Vapor from the evaporation process is condensed, producing process condensate. The process condensate is transferred to LERF for storage and treatment. Vacuum for the evaporator vessel is provided by two steam jet ejectors. The 242-A Evaporator vessel vent stream is filtered and discharged through an exhaust stack. Figure 3.1 shows a simplified schematic of the 242-A Evaporator process. A more detailed description of the 242-A Evaporator process is provided in Chapter 4.0.

3.5 WASTE IDENTIFICATION

All of the waste accepted by the 242-A Evaporator is stored in the DST System. Waste characterization for a campaign is based on sampling and analysis results and/or process knowledge. Based on this information, certain DST System tanks are selected as 'candidate feed tanks' for processing in the 242-A Evaporator. The contents of these candidate feed tanks are subjected to closer scrutiny and evaluated against 242-A Evaporator waste acceptance criteria before the final tank selection is made. To meet waste acceptance criteria, the contents of several tanks could be blended together in the feed tank (241-AW-102) prior to processing. The 241-AW-102 tank is not typically considered a candidate feed tank but can become a candidate feel tank if waste is staged and sampling is performed there. Selection of candidate feed tank(s) for a campaign is outside the scope of this WAP and based on operational needs of the DST system.

Process knowledge is used to determine whether actions to add waste to a tank are acceptable after a candidate feed tank(s) or the 241-AW-102 feed tank has been isolated for a campaign. Operational and maintenance activities can occur at the 242-A Evaporator or the DST System which results in the introduction of operational and maintenance additions into a candidate feed tank(s) or the 241-AW-102 feed tank. In most cases, operational and maintenance waste solution additions are anticipated. Prior to anticipated activities occurring, documentation will be placed in the Hanford Facility Operating Record, 242-A Evaporator unit-specific portion, to show waste acceptance criteria will still be met. The calculation(s) will use, as appropriate, candidate feed tank sampling and analysis results for the proposed campaign, candidate feed tank sampling and analysis results from the previous campaign for waste residing in the 241-AW-102 feed tank, coupled with information about the type and quantity of solutions to be introduced into the isolated waste. When the operational and maintenance waste solution addition occurs

and is unanticipated, documentation will be prepared after the event and prior to processing and will be placed in the Hanford Facility Operating Record, 242-A Evaporator unit-specific portion, in a similar fashion to the anticipated event.

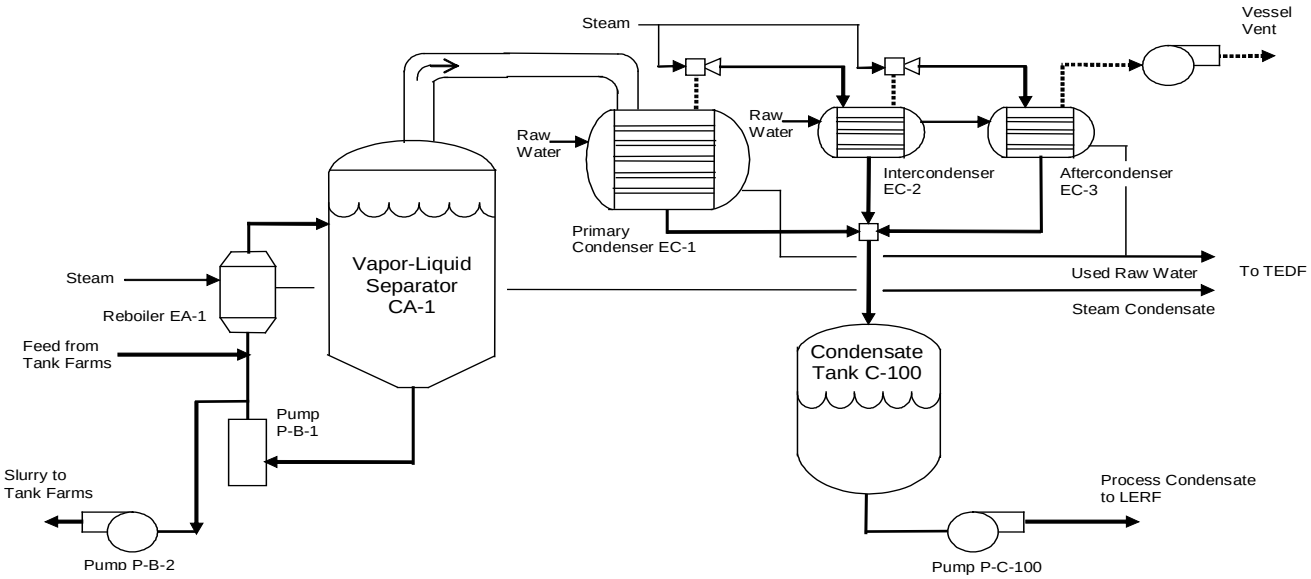
Anticipated or unanticipated water additions to isolated candidate feed tank(s) or the 241-AW-102 feed tank do not require documentation. Water additions will not affect whether the waste acceptance criteria will be met.

3.5.1 General Constituent Description

The only waste stream processed at the 242-A Evaporator is the DST System waste stream. The mixed waste is an aqueous solution containing dissolved inorganic salts such as sodium, potassium, aluminum, hydroxides, nitrates, and nitrites. The mixed waste in some tanks has detectable levels of heavy metals such as lead, chromium, and cadmium. The radionuclide content includes fission products such as Sr-90 and Cs-137, and actinide series elements such as uranium and plutonium. Small quantities of ammonia and organics, such as acetone, butanol, and tri-butyl phosphate, could be present. Waste received in the DST System has been chemically adjusted to ensure the waste is compatible with materials used for construction of the waste tanks and the 242-A Evaporator. The physical consistency of the waste in the DST System ranges from liquid supernate to thick sludge. Waste fed to the 242-A Evaporator is supernate taken from the DST System; the sludge is not processed through the 242-A Evaporator.

The slurry, which results from treatment of DST System waste in the 242-A Evaporator, is an aqueous solution containing the same components as the feed stream with increased concentrations of non-volatile organic and inorganic constituents. The slurry may also contain solids precipitated due to the liquid volume reduction. Most of the volatile constituents in the feed are separated into the process condensate. The process condensate, a mixed waste, is a dilute aqueous solution with ammonia, volatile organics, and trace quantities of non-volatile constituents.

Figure 3.1. 242-A Evaporator Simplified Schematic



3.5.2 Classification of Waste

The waste processed at the 242-A Evaporator is classified as a mixed waste because it contains a radioactive component and a chemical component that designates as a dangerous waste. The waste processed is designated and assigned dangerous waste codes for waste stored in the DST System as follows.

- Waste generated from the evaporation treatment process includes slurry and process condensate. The concentrated slurry and process condensate are mixed waste since they are derived from the treatment of the DST System listed dangerous waste due to waste codes F001 through F005. The two waste streams may also exhibit one or more dangerous waste characteristics (WAC 173-303-090).

- Other 242-A Evaporator waste streams do not contact mixed waste solutions, such as cooling water and steam condensate. These waste streams are not discussed in this WAP because these streams do not designate as dangerous waste under WAC 173-303. Any waste sampling and analysis for purposes of designation would be conducted pursuant to WAC 173-303-170, outside the scope of this Permit.

3.5.3 Dangerous Waste Numbers

The 242-A Evaporator is specifically designed to accept DST System waste directly from feed tank 241-AW-102. Waste acceptable for transfer to the 242-A Evaporator could be assigned any of the dangerous waste numbers found in Chapter 1.0, Part A, Form (latest Revision). These numbers are identical to the ones in the Part A, Form (latest Revision) for the DST System. Process knowledge and historical data indicate that the slurry stream returning to the DST System contains the same dangerous waste constituents as the waste feed, so the same dangerous waste numbers are applicable to the feed and slurry.

Table 3.1 lists the dangerous waste numbers assigned to the process condensate. The process condensate is designated with the dangerous waste numbers F001 to F005 because the process condensate is derived from treatment of DST System waste assigned these numbers.

Table 3.1. Waste Designation for Process Condensate.

Waste number	Characteristic/Source	Basis for designation
F001	Spent halogenated solvents	Derived from F001 waste
F002	Spent halogenated solvents	Derived from F002 waste
F003	Spent nonhalogenated solvents	Derived from F003 waste
F004	Spent nonhalogenated solvents	Derived from F004 waste
F005	Spent nonhalogenated solvents	Derived from F005 waste
F039	Multi-source leachate from waste disposal operations	Future receipt of waste with the F039 number, derived from F001 through F005.

The slurry waste stream generated at the 242-A Evaporator is also a mixed waste, but the slurry waste is not stored at the 242-A Evaporator, as it is transferred back to the DST system, and therefore not subject to the WAP. In addition to the F001–F005 dangerous waste numbers, the slurry waste may designate for one or more applicable characteristic dangerous waste numbers.

3.6 WASTE ACCEPTANCE PROCESS

This section describes the actions performed before every campaign to determine candidate feed tank waste is acceptable for treatment at the 242-A Evaporator. Because initial acceptance of the process condensate

at LERF is based on completion of a waste stream profile using candidate feed tank data, LERF waste acceptance criteria are also considered in the selection of a candidate feed tank. DST wastes are not accepted for treatment in the 242-A Evaporator unless the 242-A Evaporator waste acceptance criteria are satisfied, and the process condensate projected to be generated via treatment in the 242-A Evaporator satisfies LERF waste acceptance criteria.

The 242-A operates as a batch treatment system. Feed for each evaporator campaign must follow this waste acceptance process for waste verification and waste acceptance. Therefore, there is no need to periodically re-evaluate any waste stream.

Evaluation of data produced from the sampling and analysis of candidate feed tank waste for each campaign are documented in the campaign specific process control plan, process memo and associated engineering calculations, which are maintained in the Hanford Facility Operating Record, 242-A Evaporator, unit specific portion. Process control plans are prepared to describe and define the specific controls required for a planned campaign. Each process control plan includes the information described below:

- Waste Feed Description - describes the source, volume, and any potential mixing or blending data.
- Campaign Objectives – details the waste reduction volume estimates and specific gravities expected for each campaign.
- Candidate Feed Tank Sampling and Analysis Evaluation– describes the actual sampling and analysis data for each candidate feed tank for each campaign. This evaluation includes review of data to the 242-A Evaporator waste acceptance criteria, other health and safety controls beyond the scope of the Permit for operation of the 242-A Evaporator, and calculation of the expected process condensate constituent concentrations for review to the LERF waste acceptance criteria.
- Process Controls and Campaign Recommendations – describes the limits and conditions for each campaign based on the campaign objectives and candidate feed tank analytical data.

3.7 CANDIDATE FEED TANK WASTE ACCEPTANCE PROCESS

Once possible feed candidate tanks have been identified, the method for determining if the waste in a candidate feed tank is acceptable for processing is followed. This section describes the waste acceptance process and Figure 3.2 provides an overall process flow.

The following activities are performed to determine if candidate waste feed will meet the 242-A Evaporator waste acceptance criteria.

- Perform a boil down study to evaluate the impacts of solids formation as specified in the Evaporator DQO (Banning 2009).
- Evaluate Potential for Energetics/Uncontrolled Chemical Reactions: There must be no exothermic reaction of waste constituents that occur below 168°C (335°F), and the ratio of exotherm-to-endotherm energy be less than 1.
- Evaluate Potential for Separable Organic Phase: Prior to operation of the evaporator, the absence of separable organics in the feed must be verified or managed to preclude transfer to the 242-A Evaporator.
- Calculate Process Condensate Ammonia and Organic Concentrations: Ammonia and volatile organic concentrations are needed for the LERF waste profile sheet (refer to the Permit, Part III, LERF and 200 Area ETF, unit-specific conditions and Chapter 3.0, Waste Analysis Plan.)

3.7.1 Selecting Candidate Feed Tanks

For each 242-A Evaporator campaign, DST System tanks are selected as candidate feed tanks based on process knowledge of chemical properties with respect to waste acceptance criteria (Section 3.6.1). The initial determination of possible candidate feed tanks is outside the scope of this WAP and is based on operational needs of the DST system.

3.7.2 Candidate Feed Tank Sampling

After a candidate tank is selected, the waste in the tank is sampled and analyzed and the data evaluated to confirm waste acceptability through development of a Tank Sampling and Analysis Plan (Figure 3.2). Every candidate feed tank is sampled and analyzed to confirm waste acceptability. Sampling of a candidate feed tank waste for treatment in the 242-A Evaporator is performed according to the requirements of this WAP. The WAP reflects the rationale for determining the number of samples in the DQO (Banning 2009). The waste is sampled in the DST System, prior to transfer and acceptance at the 242-A Evaporator.

Four (4) representative samples of aqueous candidate feed tank waste supernatant, from one tank riser, are required. These samples are adequate to ensure the resulting waste characterization data are of sufficient quality for the data's planned purposes. The data are compared to the 242-A Evaporator waste acceptance criteria, applied to the 242-A Evaporator Process Control Plan for purposes of predicting process condensate properties, and used for comparison to LERF waste acceptance criteria for liner compatibility. The rationale for this statement is that the estimates of the variability of DST System content wastes properties is sufficiently defined and consistent that four (4) samples are sufficient. No solid samples are collected.

The four (4) samples will be collected from the following depths. One (1) surface sample to address the possible existence of a separable organic layer and three (3) subsurface samples are obtained from each waste candidate feed tank. The depths of the subsurface samples are determined by the Permittees based on best professional judgment (based on Table 3.3). In the event multiple candidate feed tanks are identified, sampling can occur after wastes are blended. The identified candidate feed tanks coupled with process knowledge of the feed tank (241-AW-102) provide a representative set of data for determining waste acceptance in the 242-A Evaporator. This is due to the consistency in the type of feed waste and the source of the waste. Waste in candidate feed tanks must first be accepted into the DST System by meeting the corresponding DST System waste acceptance criteria. Waste management in the DST System results in supernatant that is relatively homogeneous within each tank recognizing some concentration gradients may exist vertically within each tank caused by the transfer history and limited mixing actions within the DST System. Lateral stratification is not expected.

3.7.3 Assessing Candidate Feed Tank Sampling and Analysis Results

Candidate feed tank sampling and analysis, in conjunction with the waste acceptance criteria in Section 3.9, are used to assess whether established limits (limits are defined in the 242 Evaporator DQO, Banning 2009 and Permit, Part III, LERF and 200 Area ETF, unit-specific conditions and Chapter 3.0, Waste Analysis Plan) would be exceeded. Based on the results, three possible options are implemented:

- The waste is acceptable for processing at the 242-A Evaporator without further actions.
- The waste is unacceptable for processing as a single batch, but is acceptable if blended with other waste to be processed or the waste can be pre-treated as necessary to fully satisfy the 242-A Evaporator waste acceptance criteria.
- The waste is unacceptable for processing, and no acceptable pre-treatment or blending options can be identified.

3.8 SAMPLING PROCESS FOR DANGEROUS WASTES GENERATED FROM TREATMENT

Two mixed waste streams are generated as the result of the 242-A Evaporator process: process condensate and concentrated waste slurry. Sampling of the concentrated waste slurry is not necessary under this WAP in order to return the waste back to the DST System.

Sampling of process condensate is required for confirmation that the waste meets the LERF waste acceptance criteria with respect to LERF liner compatibility. Depending on programmatic needs, this sampling can be performed at the 242-A Evaporator during a campaign or at LERF after the campaign is completed.

Before the start of a 242-A Evaporator campaign, the decision whether process condensate sampling will be performed at the 242-A Evaporator or at LERF is documented in the process control plan, which is maintained in the Hanford Facility Operating Record, 242-A Evaporator Unit specific portion. Planning for process condensate sampling at the 242-A Evaporator (i.e., number of samples, when samples are taken, etc.) is completed before starting the campaign. Sampling at LERF is beyond the scope of this WAP.

3.8.1 Determining the Number of Process Condensate Samples

The purpose of sampling the process condensate stream at the 242-A Evaporator is to confirm that the stream is acceptable for treatment at the ETF. Before starting a 242-A Evaporator campaign where sampling will be performed at the 242-A Evaporator instead of LERF, characterization of the process condensate will be developed based on process knowledge. Process knowledge includes previous documented process condensate analysis, estimated concentrations based on documented candidate feed tank sampling and analysis, etc. Sampling of the process condensate stream at the 242-A Evaporator is performed during the campaign to confirm the characterization. Sampling frequency is determined using the following equation:

> Number of process condensate = N + 1 samples required (per campaign). Where N is the number of candidate feed tanks to be processed during the campaign.

For example, a campaign processing waste from only one candidate feed tank would require two samples, while a campaign processing waste from three candidate feed tanks would require four samples. Sampling is spread approximately evenly through the campaign, allowing for operational events such as unexpected shutdowns and planned maintenance outages. This sample frequency represents a confirmation rate of about one sample every 5 to 8 days of processing. This is reasonable based on the relatively homogeneous tank waste feed and the more or less steady state of evaporator operations. Therefore, the process condensate waste stream should also be relatively homogeneous, and multiple samples are not necessary to document or account for waste stream variability. A minimum of two samples is taken to meet LERF waste acceptance criteria.

3.8.2 Assessing Process Condensate Sampling and Analysis Results

The process condensate sample and analysis results are assessed against the LERF waste acceptance criteria.

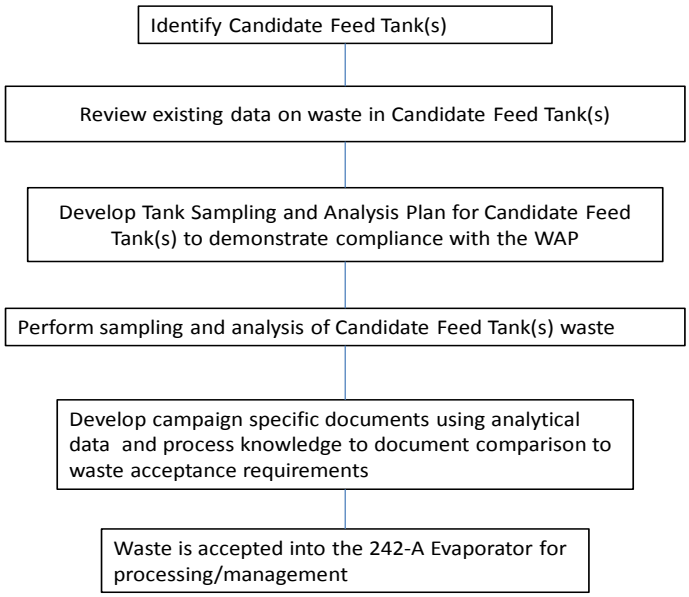
3.9 242-A EVAPORATOR WASTE ACCEPTANCE CRITERIA

Waste acceptance criteria for the 242-A Evaporator have been established from regulatory requirements, operating experience, previous sample analyses, and engineering calculations. Processing criteria are

maximum and/or minimum values of a waste analyte that, if exceeded, alert the operator that management of the waste requires further attention. The rationale for selecting a given analyte for inclusion in this WAP, as required by WAC 173-303-300, is indicated in this section for each test and/or analyte.

Additional analyses (such as specific gravity and radionuclide analysis) of the feed tanks, process condensate, and other streams are performed to ensure that the facility is operating within established parameters. This process control sampling and analysis is outside the scope of this plan because it is not used to assess compatibility of the waste with other waste and with the 242-A Evaporator tank systems.

Figure 3.2. 242-A Evaporator Waste Acceptance Process .



3.9.1 3.9.1 Candidate Feed Tank Waste Acceptance Criteria

The following sections discuss waste acceptance criteria for candidate feed tanks to be processed in the 242-A Evaporator.

3.9.1.1 Exothermic Reactions

WAC 173-303-395(1) requires waste handling be conducted to prevent an uncontrolled reaction that could damage the tank system structural integrity or threaten human health or the environment. To evaluate the possibility of an uncontrolled reaction at the elevated temperatures in the evaporator vessel, a differential scanning calorimeter (DSC) test is performed on samples of all candidate waste to be processed. DSC measures the amount of heat absorbed or released by a sample as the temperature is increased. Waste exhibiting exotherms below 168 ºC (335 ºF), or with an absolute value of the exotherm-to-endotherm ratio greater than one, will not be processed in the 242-A Evaporator without further technical evaluation.

3.9.1.2 Compatibility

WAC 173-303-640(10) and WAC 173-303-395(1) requires waste handling be conducted to prevent an uncontrolled reaction that could damage the 242-A Evaporator tank system structural integrity or threaten human health or the environment. To verify there will be no adverse affects because of mixing the contents of different candidate feed tanks in the feed tank (241-AW-102) and the 242-A Evaporator vessel (C-A-1), a compatibility evaluation is performed on waste in the candidate feed tanks. As samples from each of the planned waste sources are mixed, observations are made to note any changes in color, temperature, clarity, or other visually determinable characteristic. This would indicate an unexpected chemical reaction that might have an impact on 242-A Evaporator operations. If such visible changes are observed when mixing samples, the waste would not be processed in the 242-A Evaporator without further technical evaluation.

3.9.1.3 Separable Organics

The waste surface layer sample collected from each candidate feed tank or combined feed in 241-AW-102 is visually inspected to determine whether separable organics are present in the waste and requires the waste feed to be rejected for processing or allows waste processing. In addition, testing of the sample is performed by either percent water to determine if the whole sample is organic and cannot be discerned visibly or by total carbon/total inorganic carbon. The action limit of 25% water will indicate if the sample is all organic. Results of the visual inspection and testing are used together to determine if the waste can be accepted at the 242-A Evaporator for processing. If there is a separate visible organic layer in the candidate feed tank samples then the waste transfer to 242-A Evaporator must incorporate engineering controls to eliminate (exclude) the organic layer during the transfer.

3.9.1.4 Organic Constituents

Because process condensate generated at the 242-A Evaporator is transferred only to the LERF, the 242-A Evaporator will not accept waste for treatment whose data review does not allow treatment and storage in LERF. Process condensate could contain trace quantities of chemicals that could cause degradation of the liner material if found to exceed specifications. To predict the concentrations expected in the process condensate, the candidate feed tank waste is sampled and analyzed for organics and the results are then used to predict the concentrations in the campaign specific process condensate. The level of volatile organics in the feed is limited to ensure organic constituents that transfer to the process condensate are compatible with the LERF liner as specified in the LERF waste acceptance criteria.

The 242-A Evaporator performs distillation of waste containing organic concentrations greater than 10 parts per million by weight; therefore, organic air emissions are subject to WAC 173-303-690 (which incorporates 40 CFR 264, Subpart AA, by reference). Organic emissions from TSD units on the Hanford Site subject to 40 CFR 264, Subpart AA are controlled to ensure emissions to do not exceed 1.4 kilograms per hour and 2,800 kilograms per year. To ensure these requirements are met, the levels of volatile organics in the 242-A Evaporator feed must be limited to prevent excessive organic emissions during processing. Engineering calculations were used to determine the feed limits given in Table 3.2. The limits include a modifier "(R-1)/R", which adjusts the limits based on the campaign's planned boiloff rate. R is the ratio of feed flow rate to slurry flow rate. Typically, R is between 1 to 2, making the range of (R-1)/R 0 to 0.5.

In addition, analysis of the individual components in Table 3.2, total carbon (C_T) and total inorganic carbon (IC_T) analysis are performed as a screening tool to account for other organic species that might be present in the waste. The value of C_T minus IC_T represents the total organic concentration in the waste. If the C_T minus IC_T limit is exceeded, additional volatile organic species might be present and a more detailed evaluation will be conducted to determine organic emissions out of the vessel vent. The limit for

evaluation is 174.4 milligrams per liter, based on the conservative assumption that all organic species present in the waste are as volatile as acetone. Acetone was chosen because of its relatively high volatility and low percentage of carbon.

Based on the liner manufacturer's compatibility data, waste acceptance criteria from the LERF will impose concentration limits on classes of constituents that could potentially degrade the liner. To ensure that these limits are not exceeded in the process condensate, the concentration limits are applied to the candidate feed tanks as well, with the modifier "(R-1)/R". A C_T minus IC_T analysis, similar to the one described previously, is also applied to the LERF liner limits. The strictest limit for organic species is 2,000 milligrams per liter. Assuming the organic is acetone (with its low percentage of carbon); this converts to a carbon value of 1,240 milligrams per liter.

The calculations in Table 3.2 require use of the ɜsum of the fractionsɜ technique. A calculation is performed where the analysis of each constituent is divided by its associated limit to produce a fraction of the limit. If the sum of these fractions is less than 1, the waste meets the requirements in the tables.

3.9.2 Process Condensate Waste Acceptance Criteria

The waste acceptance criteria for process condensate sampling, including treatability, LERF liner compatibility, compatibility with other waste, etc., is given in the Permit, Part III, LERF and 200 Area ETF unit-specific conditions and Chapter 3.0, Waste Analysis Plan.

Table 3.2. Candidate Feed Tank Limits for Vessel Vent Organic Discharge[a].

Feed constituent	Limit (milligrams per liter) b, c
Acetone	174.4 ([R-1]/R)
1-Butanol	452 ([R-1]/R)
2-Butoxyethanol	190.4 ([R-1]/R)
2-Butanone	116 ([R-1]/R)
Tri-butyl phosphate	2.03E+4 ([R-1]/R)
Total carbon and Total inorganic carbon	(CT-ICT) < 174.4 ([R-1]/R) (as acetone)

[a] Limits are based on a maximum continuous operating time equivalent to 6 months per year. If total operating time is expected to exceed 6 months per year, the limits must be re-evaluated.

$$\sum_{n=1}^{i}\left(\frac{Conc_n}{LIMIT_n}\right) \le 1$$

[b] The limits are applied using the sum of the fractions technique: where i is the number of organic constituents detected in analysis of the waste feed tank. Total carbon and total inorganic carbon analysis are not part of the summation.

[c] R is the ratio of feed flow rate to slurry flow rate (typically R = between 1 and 2).

3.10 SAMPLE COLLECTION AND ANALYSIS

This section discusses sampling and analysis, including sampling procedures, sample collection points, sample quality assurance/quality control (QA/QC), and selection of analytes.

3.10.1 Sample Collection

This section describes collection of candidate feed tank waste and process condensate samples. Candidate feed tank waste is sampled and analyzed before the start of each 242-A Evaporator campaign. Process condensate samples are taken at the 242-A Evaporator only if the decision is made before the start of the campaign that sampling will be done at the 242-A Evaporator instead of LERF.

3.10.1.1 Candidate Feed Tank Sample Collection

Candidate feed tank waste samples are obtained by using a grab sampling method (e.g. "bottle on a string method") specified in ASTM E300-86. The number of lateral sampling locations in candidate feed tanks is limited by the availability of tank risers providing access into the tank. Generally, only a few risers in each tank are actually available for sampling because the risers are dedicated to instrumentation or other uses. Sampling within a vertical column is generally limited only by the depth of waste in the tank.

Riser selection is determined using best professional judgment. Previous waste feed tank sampling campaigns used two or more risers, and showed that negligible lateral variability exists in the DST System waste supernatants; therefore, only one riser will be used. Sample depths are determined depending on whether layering is suspected to exist and applying the requirements given in Table 3.3.

3.10.1.2 Candidate Feed Tank Sampling Quality Assurance and Quality Control

For each candidate feed tank waste sample, a sample solution is drawn from the sample riser using one or more sample bottles. Sample bottles are precleaned, amber-colored glass bottles sealed with Teflon* caps or septum caps. The exceptions to the sample bottle requirements are: a clear bottle is used for the surface sample to determine the existence of separable organics and the bottle for VOA analysis must be sealed with a septum cap.

For candidate feed tank sampling quality control, one field blank, consisting of one or more sample bottles, is taken during the sample event. Field blanks are inserted at least 1-foot into the head space through the sample riser used during the sample event. One trip blank, also consisting of one or more sample bottles, is taken during each sample event. Trip blanks are analyzed as independent samples for VOA. Field and trip blanks use the same types of sample bottles as the actual samples and are filled with reagent-grade water before shipment to the field.

Preservatives are not used with candidate feed tank samples because of concerns with high radiation exposure that would result from additional handling of sample solutions. It is not practical to refrigerate the bulky, shielded sample pigs and shipping containers. Biological activity, generally the largest problem in environmental samples, is unlikely in candidate feed tank samples because of the high salt content, pH, and radioactivity of the sample.

---

*Teflon is a trademark of E.I. DuPont de Nemours & Company

The chain of custody is documented on a data sheet that includes a unique sample number, date and time sample was taken, custody seal number, and signature of the sampler. When possession of the sample is transferred to other persons, such as the shipper or laboratory, the signature of the relinquisher and receiver are recorded, along with date and time of the transfer. The receiver at the laboratory also documents on the data sheet that the sample seal number is correct and the seal is intact. The chain-of-custody data sheets are included in the operating record.

3.10.1.3 Deviations from Specified Sampling Practices

The WAP requires ASTM E 300 'bottle on a string procedure' for sampling (ASTM E300-86). Due to high radiation fields, some deviations to the standard have been necessary to implement safely the sampling practices in the field. These deviations are documented below.

- Requirement: The sampling apparatus be filled and allowed to drain before drawing the sample.

  Deviation: Sampling personnel lowers the sampling apparatus to the specified level and collects the sample. To pour the contents out and resample would encourage the spread of radiological contamination and additional whole body and extremity radiation exposure.

- Requirement: Bottles and jars may be made of clear or brown glass or polyethylene with necks shaped to receive glass stopper or a screw cap made of metal or plastic material.

  Deviation: Sampling personnel uses clear or amber glass with necks shaped to receive rubber stoppers. Glass stoppers were used at one time but resulted in broken sample bottles during the removal of the glass stoppers from the glass bottles.

- Requirement: Stopper and label bottles immediately after taking the samples and deliver them to the laboratory.

  Deviation: Sampling personnel screws on the bottle cap after the sample has been collected. Because of the alkalinity of the tank waste sample labels will not stay on bottles after samples are collected. Therefore, sample bottles are etched with the sample numbers before the samples are collected. The samples are shipped to the laboratory as soon as resources are available, within three days of sample collection.

- Requirement: Select wiping cloths so that lint is not introduced, contaminating the samples.

  Deviation: Sampling personnel uses damp cotton towels to wipe down sample bottles after the sample bottles have been capped. The intent is to remove any waste that may have been deposited on the bottle during the sampling event to minimize contamination and personnel exposure.

- Requirement: To prevent the loss of the liquid during shipment and to protect against moisture and dust, cover the closure of the glass bottle with plastic caps, which have been swelled in water, wiped dry, placed over the top of the stoppered bottle, and allowed to shrink tightly in place. Screw-top bottles are recommended. The cap should be lined with material inert to the sample. The screw caps should be secured by use of adhesive tape or similar material.

  Deviation: Sampling personnel uses screw caps and 4-mil plastic bags. The cap is Teflon-lined which is inert to the sample. The sample bottle is placed inside a plastic bag, which is placed inside a steel pig (or sample pig). The steel pig is placed inside a shipping pig. The screw cap is not secured with adhesive tape. Securing the sample bottle caps with tape would present the laboratory with difficulty

of removing the caps remotely (in the hot cell). If the sample leaks from the sample bottle, it is trapped in the plastic bag. The custody seal is placed on the shipping pig per procedure.

- Requirement: All sampling apparatus and closures shall be clean, dry, free of contaminants, and constructed of materials that are inert to the product to be sampled.

  Deviation: Prior to sampling, sampling equipment such as the sample holder shall be cleaned using a procedure that is consistent with SW-846, *Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods*, sampling equipment cleaning protocol. The bottles with screw caps are washed and certified and are not opened until at the time of the sampling event. The bottles are opened when the previous sample is completed so that only one bottle is opened at the time of sampling to insert the rubber stopper from the sample holder. The stopper and bottles are constructed from materials that are inert to the product to be sampled.

3.10.1.4 Process Condensate Sample Collection

Process condensate samples, when performed at 242-A Evaporator instead of LERF, are taken from the process condensate transfer line in the condenser room of the 242-A Building. Grab sampling is performed during the campaign at the SAMP-RC3-2 sampler or other sample port by opening a valve and allowing a small volume of process condensate to flush valve and line/piping. The required volume of sample is collected into labeled bottles and chain of custody is maintained. Samples of process condensate are collected in a manner to produce a representative sample. Testing methods are used consistent with SW-846 procedures as listed in Table 3.4.

3.10.1.5 Process Condensate Sampling Quality Assurance and Quality Control

For information on process condensate sample collection, including the number and types of sample bottles, sampling QA/QC, etc., refer to the Permit, Part III, LERF and 200 Area ETF unit-specific conditions and Chapter 3.0, Waste Analysis Plan.

3.10.2 Analyte Selection and Rationale

The DQO analysis for the 242-A Evaporator examined the data needs for sampling the candidate feed tanks and determined that the analyses in Table 3.4 should be conducted to satisfy WAC 173-303-300 requirements. Table 3.4 also contains the rationale for these parameters being selected. Section 3.7 provides additional detail on the rationale.

For information on process condensate sample analyte selection and rationale, refer to the Permit, Part III, LERF and 200 Area ETF unit-specific conditions and Chapter 3.0, Waste Analysis Plan.

Table 3.3. Candidate Feed Tank Sample Point Selection.

Number of samples	Location of sample points
Four samples, no layering suspected	One surface sample to address the potential for a separable organic layer and three subsurface samples: one sample each obtained from the upper third (near the half way point), one sample in the middle third and one sample in the lower third (near the lower limit) of the supernatant layer.
Four samples, layering suspected	One sample taken from the waste surface to address the potential for a separable organic layer. Three samples targeting the expected midpoint of the suspected layers. If more than three layers are suspected, The larger layers have sampling priority.

Table 3.4. Analytes for Candidate Feed Tanks

Parameter	Test technique	Analyte (CAS#)	Rationale
Exotherm	Differential scanning calorimeter	Temperature and energy	Verify the waste will not undergo an exothermic reaction (Section 3.9.1.1).
Compatibility test	Mixing and compatibility study	Visual physical changes	Verify the waste is chemically compatible (Section 3.9.1.2).
Separable Organics	Visual Inspection	Visual Inspection	Process control information needed to evaluate campaign parameters and status.(Section 3.9.1.3)
	TGA OR Carbon coulometric detector	Percent Water OR Total carbon, Total Inorganic carbon	Verify surface sample is not a single layer of homogeneous liquid (Section 3.9.1.3)
Organic compounds	Gas chromatograph/ mass spectrometer	Acetone (67-64-1), 1-Butanol (71-36-3), 2-Butoxyethanol (111-76-2), 2-Butanone (78-93-3), Tri-butyl phosphate (126-73-8)	Used in calculations to verify that vessel vent emissions will not exceed regulatory limits and to prevent compatibility problems with the LERF liner (Section 3.9.1.4).
	Carbon coulometric detector	Total carbon, Total inorganic carbon	Used in calculations to verify that vessel vent emissions will not exceed regulatory limits and to prevent compatibility problems with the LERF liner (Section 3.9.1.4).
Ammonia	Ion selective electrode or Ion chromatography	Ammonia (7664-41-7)	To prevent compatibility problems with the LERF liner (Section 3.9.1.4).
CAS#=Chemical Abstract Service Number LERF=Liquid Effluent Retention Facility TGA = Thermogravimetric analysis			

3.11 ANALYTICAL METHODS AND QUALITY ASSURANCE AND QUALITY CONTROL

This section provides information on the analytical methods and QA/QC for candidate feed tank samples, including discussions concerning laboratory selection and analytical methods. For information on process

condensate analytical methods and QA/QC, refer to the Permit, Part III, LERF and 200 Area ETF unit-specific conditions and Chapter 3.0, Waste Analysis Plan.

3.11.1 Laboratory Selection

Because of the nature of the samples, it is anticipated that candidate feed tank waste sample testing will be conducted at the 222-S Laboratory Complex. Other laboratories at the Hanford Facility could be used provided they are equipped to handle such samples. Laboratory selection depends on availability, analytical needs, and the ability of the laboratory to meet Permit and quality assurance requirements.

3.11.2 Analytical Methods

The analytical methods that must be followed for testing candidate feed tanks are included in Table 3.5. Performance-based specifications rather than procedure-based specifications are used for determining the appropriate analytical methods. This allows for necessary adjustments to the methods for Hanford Facility-specific issues; related to high radioactivity of the sample matrix, while ensuring acceptable data quality. Because of the high radioactivity, the analytical method will in some cases deviate from those in national standards such as *Test Methods For Evaluating Solid Waste*, SW-846 (EPA 1986) and *Standard Methods for the Examination of Water and Waste Water* (AWWA 2005).

3.11.3 Laboratory Quality Assurance and Quality Control

Candidate feed tank waste testing and sampling methods conducted as part of this plan must meet the data quality requirements contained in Table 3.6 to be considered acceptable for decision-making purposes. Quality control check samples (i.e., calibration samples and/or laboratory control samples) generally are performed once per sample event (e.g., once for all samples from one candidate feed tank). Matrix spike and duplicate analysis are performed once per sample event for all methods except differential scanning calorimetry (DSC). A duplicate analysis is performed for DSC analysis to determine method precision. Accuracy for DSC is evaluated by using the laboratory control standard.

The QA/QC program for sampling and analysis related to this unit must, at a minimum, comply with the applicable regulatory requirements. All analytical data will be defensible and will be traceable to specific, related quality control samples and calibrations.

Table 3.5. Analytical Methods for Candidate Feed Tank Stream Analytes.

Category	Analyte	Performance-based analytical methods	Method
Organics	Acetone 1-Butanol 2-Butanone	Purge and trap and GC/MS (VOA)	SW-846 Method 8260
	2-Butoxyethanol Tri-butyl Phosphate	Solvent extraction and GC/MS (semi-VOA)	SW-846 Method 3520B and 8270A
Inorganic	Ammonia	Ion selective electrode and Micro-distillation Ion Chromatography	AWWA Method 4500-NH3 and EPA method 300.7
Other	Exotherm	Differential scanning calorimeter	A sample is placed in the DSC unit and heated to 500° C (932° F). The differential heat flow between the sample and a reference pan is monitored by thermocouples.
	Mixing and compatibility study	Lab specific	Representative samples of each candidate feed tank are mixed and visually checked for gas evolution, heat generation, precipitation, dissolution of solids, color change, clarity, and any other observable characteristics.
	Separable Organics	TGA OR Carbon coulometric detector	A small subsample (typically about 20 mg) is heated to approximately 500° C (932° F). The percent weight loss in the boiling range of water is reported as sample percent water. OR Coulometry: ASTM 5310
	Total carbon	Combustion with IC_T/C_T coulometric detection OR Persulfate oxidation with IC_T/TOC coulometric detection	Combustion and persulfate treatment: AWWA Method 5310 Coulometry: ASTM 5310
	Total Inorganic Carbon	Acidification with IC_T/TOC coulometric detection	Acidification: AWWA Method 5310. Coulometry: ASTM 5310

ASTM=American Society of Testing and Materials
AWWA=American Water Works Association
GC/MS=Gas Chromatograph/Mass Spectrometer
IC_T= Total Inorganic Carbon
TGA= Thermogravimetric analysis
TOC=Total Organic Carbon
VOA= Volatile Organic Analysis

Table 3.6. Quality Assurance Requirements for Candidate Feed Tank Stream Analytes

Category	Analyte	Estimated quantitation limit (matrix specific)	Precision (RPD between duplicates), %	Accuracy (recovery of matrix spike), %	Action level [1]
Organics	Acetone	28 mg/L	<25	40-110	> 87 mg/L[2]
	1-Butanol	20 mg/L	<25	30-110	> 226 mg/L[2]
	2-Butoxyethanol	30 mg/L	<25	30-110	> 95.2 mg/L[2]
	2-Butanone (methyl ethyl ketone)	18 mg/L	<25	40-110	> 58 mg/L[2]
	Tri-butyl phosphate	50 mg/L	<25	40-125	> 1.015E+4 mg/L[2]
Inorganic	Ammonia	400 ug/ml	<20	75-125	> 50,000 mg/L
Other	Exotherm	None	<20[3]	Not applicable [3]	< 168 EC or absolute value of ratio of exotherm to endotherm > 1
	Mixing and compatibility study	Not applicable	Not Applicable	Not Applicable	Visual: unusual changes in color, temperature, clarity, etc.
	Total carbon	25 ug/mL	<20	75-125	C_T-IC_T > 87 mg/L
	Total inorganic carbon	25 ug/mL	<20	75-125	C_T-IC_T > 87 mg/L

1=In deriving the action levels, the ratio of feed flow rate to slurry flow rate (R) is assumed to be 2.
2=For organic species limits, sum of the fractions rule apply (refer Table 3.2). Total carbon and total inorganic carbon are not included in the summation of organics.
3=Precision for this method is evaluated by the deviation between sample (unspiked) and sample replicate. Accuracy for DSC is evaluated by using the laboratory control standard.
RPD - relative percent difference C_T - total carbon IC_T - total inorganic carbon
mg/L - milligram per liter ug/L - microgram per liter

3.12 REFERENCES

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

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, 2005, *Standard Methods for the Examination of Water and Wastewater*, 17th edition, American Public Health Association/America Water Works Association, Washington, D.C., updated periodically.

Banning D.L., 2009, *242-A Evaporator Data Quality Objectives (DQO)*, SD-WM-DQO-014 (most current revision), CH2M HILL Hanford Group, 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.

Quarter Ending 12/31/2013

24590-HLW-PCN-ENV-13-006

Hanford Facility RCRA Permit Modification Notification Form
Part III, Operating Unit 10
Waste Treatment and Immobilization Plant

Index

Page 2 of 3: Hanford Facility RCRA Permit, Part III, Operating Unit 10, Waste Treatment and Immobilization Plant
Update HLW Vitrification Building Process Flow Diagrams (PFD) for the HLW Melter Offgas Treatment Process (HOP) System in Appendix 10.1 of the Dangerous Waste Permit.

Submitted by Co-Operator:

D. M. Busche — Date 11/6/13

Reviewed by ORP Program Office:

D. L. Noyes — Date 12/19/13

Quarter Ending 12/31/2013 24590-HLW-PCN-ENV-13-006

Hanford Facility RCRA Permit Modification Notification Form	
Unit: **Waste Treatment and Immobilization Plant**	Permit Part: **Part III, Operating Unit 10**

Description of Modification:

The purpose of this Class 1 prime modification is to update the following Process Flow Diagrams (PFD) for the HLW Melter Offgas Treatment Process (HOP) System in Appendix 10.1 of the Dangerous Waste Permit. The following source PFDs are submitted to replace the permit versions currently in Appendix 10.1:

Appendix 10.1			
Replace:	24590-HLW-M5-V17T-P0004, Rev. 1	With:	24590-HLW-M5-V17T-00004, Rev. 5
	24590-HLW-M5-V17T-P20004, Rev. 0		24590-HLW-M5-V17T-20004, Rev. 1

The referenced PFDs have been revised. They incorporate changes provided in applicable document change forms (e.g., DCN, SCN, SDDR, FCN, FCR, etc.) and changes associated with the resolution to comments on change documents since the issuance of the last revision of the permitted drawings. This modification requests Ecology approval and incorporation into the permit, the specific changes to these PFDs that are indicated by revision notes, clouds, and revision triangles. Revisions are the result of ongoing design changes. The following identifies the significant types of changes on the attached drawings.

Changes to 24590-HLW-M5-V17T-00004 and 24590-HLW-M5-V17T-20004 include:

- Added, revised, or deleted notes, offsheet connector labels, and references
- Removed safety evaluation holds on HOP offgas equipment, except for HOP-HX-00002 (per DCN 24590-HLW-M5N-V17T-00031) and HOP-HX-00004 (per DCNs 24590-HLW-M5N-V17T-00030 and -00032) in grid E5 of the respective drawings
- Removed operating duties (e.g., Btu/hr) in grid H5 for HOP-HX-00001 and HOP-HTR-00001 (per DCN 24590-HLW-M5N-V17T-00013), and for HOP-HX-00003 and HOP-HTR-00007 (per DCN 24590-HLW-M5N-V17T-00014)
- Deleted stream data table from grid A4 through A8; WTP no longer includes the stream data tables on PFDs
- Changed stream and equipment tags from plant service air (PSA) to instrument service air (ISA) and from variable speed drive (VSD) to adjustable speed drive (ASD) throughout the drawings
- Added air dilution to ammonia feed stream in grid C3
- Incorporated CO monitor changes in grids G4 through G6 (CO monitor details are also shown in greater detail on P&IDs 24590-HLW-M6-HOP-00011 and 24590-HLW-M6-HOP-20011, respectively)
- Relocated water misting stream from the hot side to the cold side of HOP-HX-00002 (per DCN 24590-HLW-M5N-V17T-00019) and HOP-HX-00004 (per DCN 24590-HLW-M5N-V17T-00020) (shown in greater detail in P&IDs 24590-HLW-M6-HOP-00003002 and 24590-HLW-M6-HOP-20003002, respectively)

This PCN updates information in Appendix 10.1 to reflect current design. These DWP components may be re-evaluated to confirm design adequacy. If the re-evaluation results in future design changes, the changes will be reviewed by Ecology in subsequent permit modifications.

The following outstanding change documents have been submitted to Ecology pursuant to permit condition III.10.C.9.h and are maintained in the WTP Operating Record.

24590-HLW-M5N-V17T-00040

This DCN is applicable to 24590-HLW-M5-V17T-00004 and deletes the safety evaluation hold for HOP-HX-00002, added new stream HOP42-1 (offgas with water mist addition), and revised heat duty for HOP-HX-00002. The DCN was submitted to Ecology on 8/28/2013 in CCN 257039.

Quarter Ending 12/31/2013 24590-HLW-PCN-ENV-13-006

24590-HLW-M5N-V17T-00041

This DCN is applicable to 24590-HLW-M5-V17T-20004 and deletes the safety evaluation hold for HOP-HX-00004, added new stream HOP42-2 (offgas with water mist addition), and revised heat duty for HOP-HX-00004. The DCN was submitted to Ecology on 9/11/2013 in CCN 257041.

24590-HLW-M5N-V17T-00048

This DCN is applicable to both drawings and updates instrumentation from vendor submittals. The DCN was submitted to Ecology on 2/3/2006 in CCN 134663.

24590-HLW-M5N-V17T-00055

This DCN is applicable to both drawings and updates HOP skid numbers and details. The DCN was submitted to Ecology on 9/3/2009 in CCN 196289.

In accordance with Permit Condition III.10.C.2.e, this permit modification sent to Ecology may include page changes to the Permit, attachments, and permit application supporting documentation.

WAC 173-303-830 Modification Class:	Class 1	Class [1]1	Class 2	Class 3
Please mark the Modification Class:		X		

Enter relevant WAC 173-303-830, Appendix I Modification citation number: N/A

Enter wording of WAC 173-303-830, Appendix I Modification citation:

In accordance with WAC 173-303-830(4)(d)(i), this modification notification is requested to be reviewed and approved as a Class [1]1 modification. WAC 173-303-830(4)(d)(ii)(A) states, "Class 1 modifications apply to minor changes that keep the permit current with routine changes to the facility or its operation. These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. In the case of Class 1 modifications, the director may require prior approval."

Modification Approved/Concur: [✓] Yes [ ] Denied (state reason below)

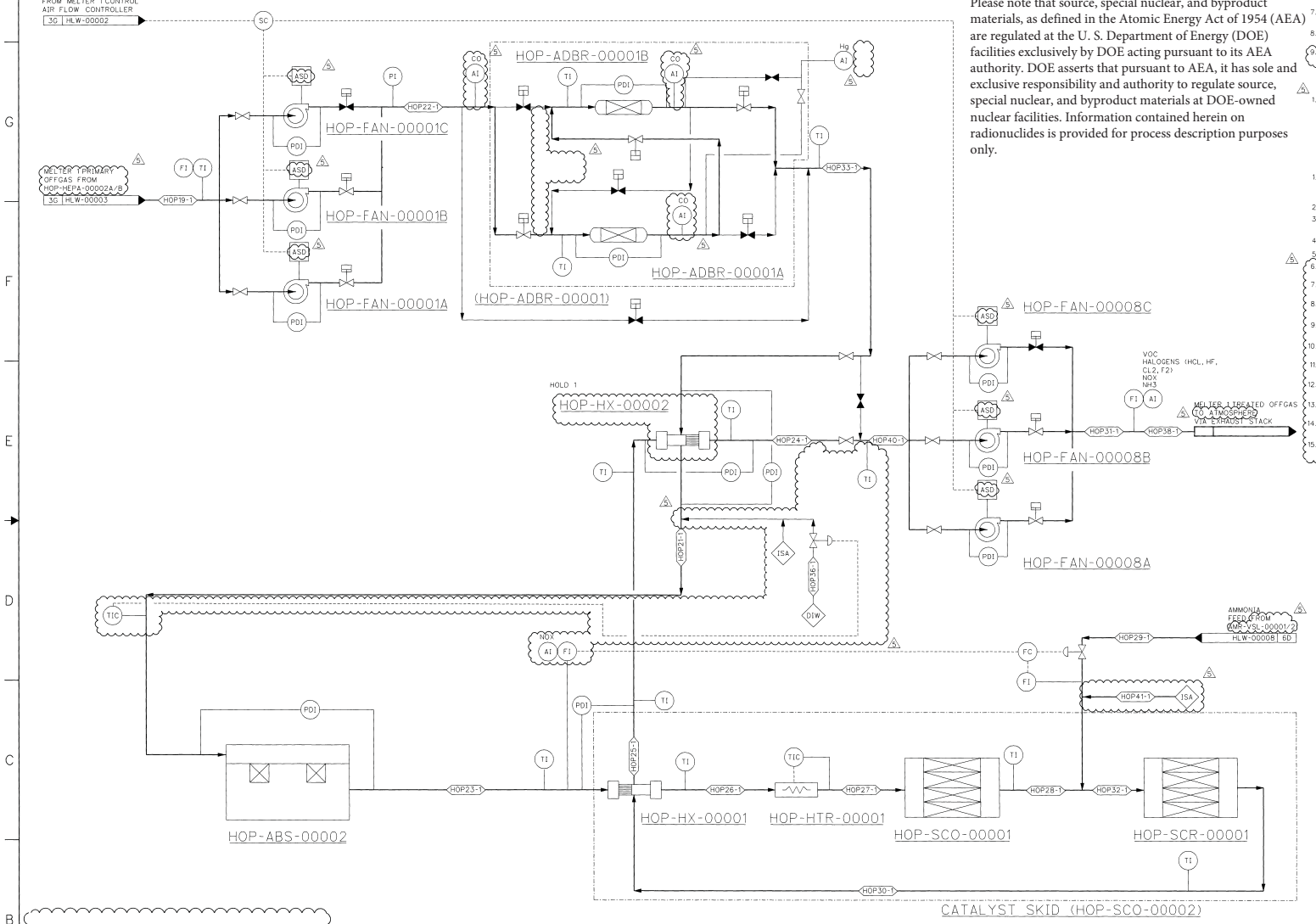
Reason for denial:

Reviewed by Ecology:

S. Dahl 1/10/14 Date

24590-HLW-M5-V17T-00004

PLANT ITEM NUMBER DESCRIPTION (NOTE 6)	HOP-FAN-00001A/B/C BOOSTER EXTRACTION FAN	HOP-ABS-00002 SILVER MORDENITE COLUMN	HOP-ADBR-00001A/B ACTIVATED CARBON ADSORBER	HOP-HX-00001 CATALYST SKID PREHEATER	HOP-HX-00002 SILVER MORDENITE PREHEATER	HOP-HTR-00001 CATALYST SKID ELECTRIC HEATER	HOP-FAN-00008 A/B/C STACK EXTRACTION FAN	HOP-SCO-00001 THERMAL CATALYTIC OXIDIZER	HOP-SCO-00002 CATALYST SKID	HOP-SCR-00001 NOX SELECTIVE CATALYTIC REDUCER
OPERATING DUTY BATCH/OPERATING CAPACITY (NOTE 7)	- / 1000 SCFM	N/A / 2000 SCFM	N/A / 2000 SCFM	(NOTE 9) / 2000 SCFM	TBD / 2000 SCFM	(NOTE 9) / 2000 SCFM	- / 1000 SCFM	N/A / 2000 SCFM	N/A / 2000 SCFM	N/A / 2000 SCFM



Please note that source, special nuclear, and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA) are regulated at the U. S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts that pursuant to AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

NOTES:

1. SEE DRAWING 24590-WTP-M5-V17T-00001 FOR LEGEND AND SYMBOLS.
2. MAJOR INDICATION AND CONTROL INSTRUMENTATION ONLY SHOWN.
3. VALVES SHOWN ONLY TO INDICATE PROCESS INTENT
4. DELETED
5. DELETED
6. EQUIPMENT INFORMATION PROVIDED PER PROCESS DATASHEETS.
7. BATCH CAPACITY REFERS TO VESSELS AND TANKS ONLY. OPERATING CAPACITY REFERS TO ALL OTHER EQUIPMENT.
8. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
9. OPERATING DUTY FOR HOP-HX-00001 AND HOP-HTR-00001 TO BE DETERMINED BY VENDOR.

HOLDS:

1. EQUIPMENT ON HOLD PENDING ISM SAFETY REVIEWS.

REFERENCE:

1. 24590-HLW-3YD-HOP-00001, REV 0: SYSTEMS DESCRIPTION FOR HLW MELTER OFFGAS TREATMENT PROCESS AND PROCESS VESSEL VENT EXTRACTION (HOP AND PVV SYSTEMS)
2. 24590-WTP-RPT-PR-01-008, REV 4: PROCESS STREAM NUMBERS.
3. 24590-WTP-RPT-ENG-02-009, REV 3: SYSTEM AND AREA LOCATOR LIST AND SYSTEM DIVISION OF RESPONSIBILITY.
4. 24590-WTP-RPT-ENG-02-010, REV 5: COMPONENT IDENTIFIERS LIST.
5. 24590-WTP-3DP-003B-00044, REV 3: STANDARD COMPONENT NUMBERING.
6. 24590-HLW-MAD-HOP-00001, REV 5: 24590-HLW-HOP-FAN-00001A - OFFGAS BOOSTER EXTRACTION FAN (MELTER 1).
7. 24590-HLW-MAD-HOP-00002, REV 5: 24590-HLW-HOP-FAN-00001B - OFFGAS BOOSTER EXTRACTION FAN (MELTER 1).
8. 24590-HLW-MAD-HOP-00003, REV 5: 24590-HLW-HOP-FAN-00001C - OFFGAS BOOSTER EXTRACTION FAN (MELTER 1).
9. 24590-HLW-MAD-HOP-00004, REV 5: 24590-HLW-HOP-FAN-00008A - OFFGAS STACK EXTRACTION FAN (MELTER 1).
10. 24590-HLW-MAD-HOP-00005, REV 5: 24590-HLW-HOP-FAN-00008B - OFFGAS STACK EXTRACTION FAN (MELTER 1).
11. 24590-HLW-MAD-HOP-00006, REV 5: 24590-HLW-HOP-FAN-00008C - OFFGAS STACK EXTRACTION FAN (MELTER 1).
12. 24590-HLW-M6D-HOP-00001, REV 0: 24590-HLW-HOP-ADBR-00001A/B - ACTIVATED CARBON ADSORBER (MELTER 1).
13. 24590-HLW-MED-HOP-00010, REV 4: 24590-HLW-ME-HOP-HX-00002 - SILVER MORDENITE PREHEATER (MELTER 1).
14. 24590-HLW-MKD-HOP-00011, REV 4: 24590-HLW-HOP-SCO-00002 - TCO/SCR CATALYST SKID (MELTER 1).
15. 24590-HLW-MKD-HOP-00012, REV 5: 24590-HLW-HOP-ABS-00002 - SILVER MORDENITE COLUMN (MELTER 1).

REV	DESCRIPTION	ORG	CHKD	RVWD	APVD	DATE
5	DELETED STREAM TABLE, CHANGED PSA TO ISA, INCORPORATED AMMONIA DILUTION AIR ADDITION, INCORPORATED CO MONITOR CHANGES, AND INCORPORATED THE FOLLOWING DESIGN CHANGES: 24590-HLW-M5N-V17T-00013 24590-HLW-M5N-V17T-00019 24590-HLW-M5N-V17T-00031					2/23/04
4	ISSUED TO INCORPORATE DESIGN CHANGES, AND UPDATE NOTES. DESIGN CHANGES ARE INCORPORATED FOR: 24590-HLW-DCA-PR-02-001 REV 1 24590-HLW-DCN-PR-02-021 24590-HLW-M5N-V17T-00001. 24590-HLW-DCA-PR-03-003 Rev. 1. 24590-HLW-M5N-V17T-00004	JR	DEL	JP	DWP	8-22-03
3	DOCUMENT DM REVIEW OF PFD	JFH	DEL	AD	GD	9-16-02
2	ISSUED TO SUPPORT THE STAGE 0 DESIGN, INCORPORATE DESIGN CHANGES, AND UPDATE MATERIAL BALANCE. DESIGN CHANGES ARE INCORPORATED FOR: 24590-HLW-DCN-PR-02-006, 24590-HLW-DCN-PR-02-012, AND 24590-HLW-DCA-PR-02-001 REV 0.	JR	DEL		RV	8-8-02
1	UPDATED EQUIPMENT NUMBERING, PROCESS STREAM NUMBERING, AND STREAM TABLE. VESSEL OPERATING CAPACITY CHANGED TO BATCH CAPACITY. DESIGN CHANGES ARE INCLUDED FOR: DCN-24590-01-00006.	JR	DEL		AD	12-5-01
0	THIS DRAWING SUPERCEDES DWG-W375HV-PR00032, REV.3. DESIGN CHANGES ARE INCLUDED FOR DCN-W375-00-00125, DCN-24590-01-00003, AND DCN-24590-01-00006, 24590-HLW-DCA-PR-01-002, 24590-HLW-DCA-PR-01-003, AND 24590-HLW-DCA-PR-01-004.	JR	DEL		GD	8-15-01

REVISION HISTORY

ISSUED BY SPARTIN PSC ENGINEERING ISSUE STAMP

	BY	DATE
ORIGINATOR	J. ROUSE	8/15/01
CHECKER	D. LARSON	8/15/01
APPROVER	G. DUNCAN	8/15/01
REVIEWER		

CONTENT APPLICABLE TO ALARA? [X] YES [ ] NO
ADR NO. 24590-HLW-ADR-PR-02-002 REV. 2

PROJECT No.	24590
SITE	HANFORD
AREA	200E
BUILDING No.	30

BECHTEL

RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
2435 STEVENS CENTER PLACE
RICHLAND, WA 99352

CONTRACT No: DE-AC27-01RV14136

PROCESS FLOW DIAGRAM HLW VITRIFICATION MELTER 1 SECONDARY OFFGAS TREATMENT (SYSTEM HOP)

SCALE: NTS

24590-HLW-M5-V17T-00004

REV 5

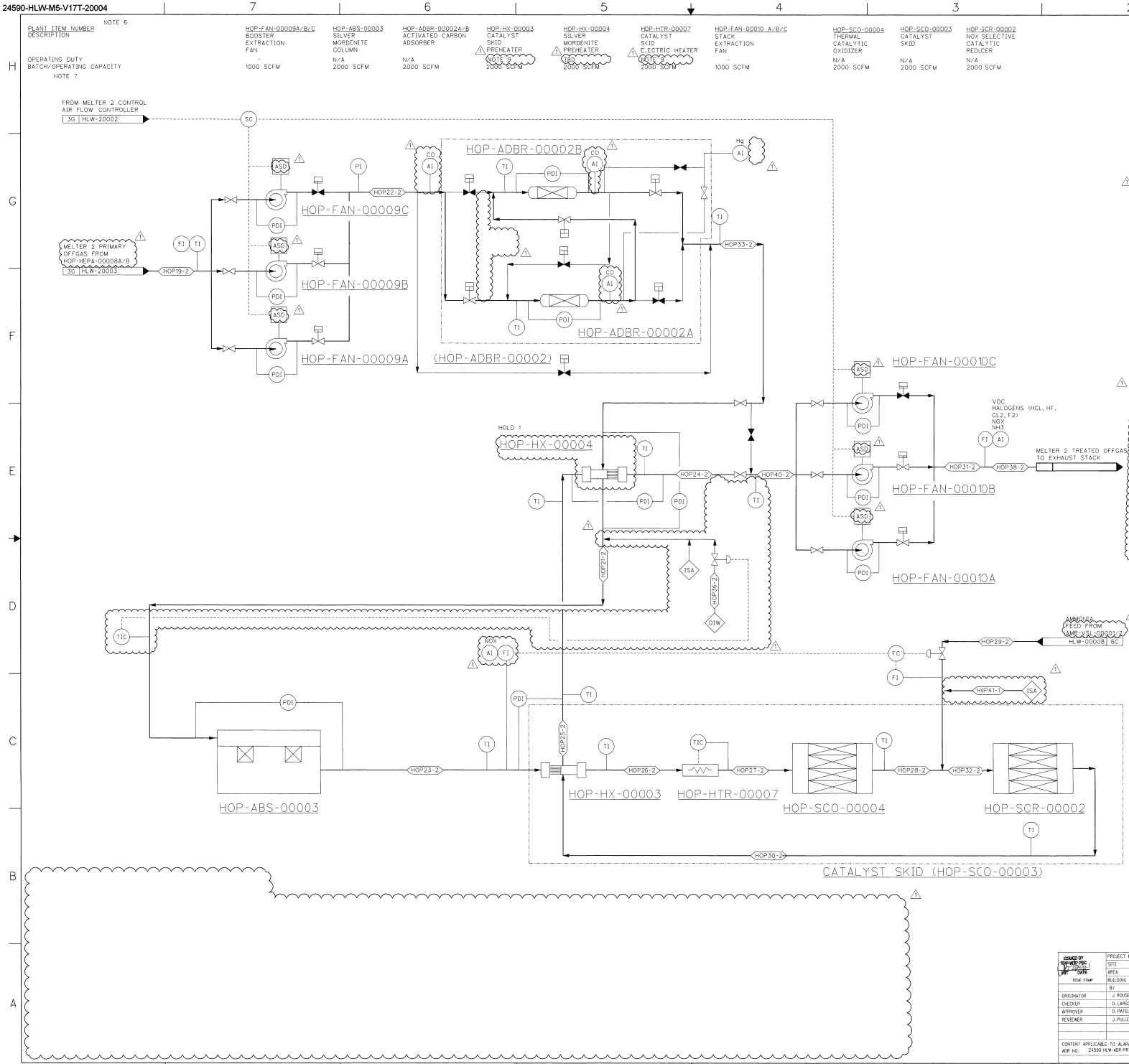
"E" SIZE - 44x34
COMPUTER GENERATED - MANUAL CHANGES NOT PERMITTED

07/12/2004 10:21:16 AM

PLOTTED BY: mrussel
C:\Work\Jobs\24590\24590-HLW-M5-V17T-00004.dgn

FORM E_SCN.DGN 02/2003

24590-HLW-M5-V17T-20004



NOTES:

1. SEE DRAWING 24590-WTP-M5-V17T-00001 FOR LEGEND AND SYMBOLS
2. MAJOR INDICATION AND CONTROL INSTRUMENTATION ONLY SHOWN
3. VALVES SHOWN ONLY TO INDICATE PROCESS INTENT
4. DELETED
5. DELETED
6. EQUIPMENT INFORMATION PROVIDED PER PROCESS DATASHEETS.
7. BATCH CAPACITY REFERS TO VESSELS AND TANKS ONLY. OPERATING CAPACITY REFERS TO ALL OTHER EQUIPMENT.
8. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING
9. OPERATING DUTY FOR HOP-HX-00003 AND HOP-HTR-00007 TO BE DETERMINED BY VENDOR.

HOLDS:

1. EQUIPMENT ON HOLD PENDING ISM SAFETY REVIEWS.

REFERENCE:

1. 24590-HLW-3YD-HOP-00001, REV 0: SYSTEMS DESCRIPTION FOR HLW MELTER OFFGAS TREATMENT PROCESS AND PROCESS VESSEL VENT EXTRACTION (HOP AND PVV SYSTEMS)
2. 24590-WTP-RPT-PR-01-008, REV 4: PROCESS STREAM NUMBERS.
3. 24590-WTP-RPT-ENG-02-009, REV 3: SYSTEM AND AREA LOCATORS LIST AND SYSTEM DIVISION OF RESPONSIBILITY.
4. 24590-WTP-RPT-ENG-02-010, REV 5: COMPONENT IDENTIFIERS LIST.
5. 24590-WTP-3DP-G03B-00044, REV 3: STANDARD COMPONENT NUMBERING
6. 24590-HLW-MAD-HOP-00029, REV. 3: 24590-HLW-HOP-FAN-00009A - OFFGAS BOOSTER EXTRACTION FAN (MELTER 2).
7. 24590-HLW-MAD-HOP-00030, REV. 3: 24590-HLW-HOP-FAN-00009B - OFFGAS BOOSTER EXTRACTION FAN (MELTER 2).
8. 24590-HLW-MAD-HOP-00031, REV. 3: 24590-HLW-HOP-FAN-00009C - OFFGAS BOOSTER EXTRACTION FAN (MELTER 2).
9. 24590-HLW-MAD-HOP-00032, REV. 3: 24590-HLW-HOP-FAN-00010A - OFFGAS STACK EXTRACTION FAN (MELTER 2).
10. 24590-HLW-MAD-HOP-00033, REV. 3: 24590-HLW-HOP-FAN-00010B - OFFGAS STACK EXTRACTION FAN (MELTER 2).
11. 24590-HLW-MAD-HOP-00034, REV. 3: 24590-HLW-HOP-FAN-00010C - OFFGAS STACK EXTRACTION FAN (MELTER 2).
12. 24590-HLW-M6D-HOP-00002, REV. 0: 24590-HLW-HOP-ADBR-00002A/B ACTIVATED CARBON ADSORBER (MELTER 2).
13. 24590-HLW-MED-HOP-00018, REV. 3: 24590-HLW-ME-HOP-HX-00004 - SILVER MORDENITE PREHEATER (MELTER 2).
14. 24590-HLW-MKD-HOP-00003, REV. 3: 24590-HLW-HOP-SCO-00003 - TCO/SCR CATALYST SKID (MELTER 2).
15. 24590-HLW-MKD-HOP-00018, REV. 6: 24590-HLW-HOP-ABS-00003 - SILVER MORDENITE COLUMN (MELTER 2).

Please note that source, special nuclear, and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA) are regulated at the U. S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts that pursuant to AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

1	DELETED STREAM TABLE, CHANGED PSA TO ISA, INCORPORATED AMMONIA DILUTION AIR ADDITION, INCORPORATED CO MONITOR CHANGES, AND INCORPORATED THE FOLLOWING DESIGN CHANGES: 24590-HLW-M5N-V17T-00014 24590-HLW-M5N-V17T-00020 24590-HLW-M5N-V17T-00030 24590-HLW-M5N-V17T-00032				7/23/04
0	INITIAL ISSUE PER: 24590-HLW-DCA-PR-02-021	JR	DEL	JP	DWP 8/6/03

ISSUED BY RPP-WTP PMC
ISSUE STAMP

PROJECT No.	24590	
SITE	HANFORD	
AREA	200E	
BUILDING No.	30	

	BY	DATE
ORIGINATOR	J. ROUSE	8/5/03
CHECKER	D. LARSON	8/6/03
APPROVER	D. PATEL	8/6/03
REVIEWER	J. PULLEN	8/6/03

CONTENT APPLICABLE TO ALARA? [X] YES [ ] NO
ADR NO. 24590-HLW-ADR-PR-02-002 REV: 2

BECHTEL

RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
2435 STEVENS CENTER PLACE
RICHLAND, WA 99352

CONTRACT No: DE-AC27-01RV14136

PROCESS FLOW DIAGRAM
HLW VITRIFICATION
MELTER 2
SECONDARY OFFGAS
TREATMENT (SYSTEM HOP)

SCALE: NTS

24590-HLW-M5-V17T-20004

REV 1

'E' SIZE - 44x34
COMPUTER GENERATED - MANUAL CHANGES NOT PERMITTED

07/12/2004 10:20:16 AM

FORM E_SIGN DCN 02/2003

PLOTTED BY rrosad
C:\Work Omni\24590-HLW-M5-V17T-20004.dgn

Table III.10.J.A – HLW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables, and Figures
HOP-HEPA-00008A (Melter 2 Secondary Offgas HEPA Filter) HOP-HEPA-00008B (Melter 2 Secondary Offgas HEPA Filter)			
Melter Offgas Treatment Process System (Cont.) HOP-ADBR-00001A (Melter 1Activated Carbon Adsorber – located on Activated Carbon Adsorber Skid HOP-ADBR-00001) HOP-ADBR-00001B (Melter 1 Activated Carbon Adsorber – located on Activated Carbon Adsorber Skid HOP-ADBR-00001) HOP-ADBR-00002A (Melter 2 Activated Carbon Adsorber – located on Activated Carbon Adsorber Skid HOP-ADBR-00002) HOP-ADBR-00002B (Melter 2 Activated Carbon Adsorber – located on Activated Carbon Adsorber Skid HOP-ADBR-00002)	HOP	**24590-HLW** -M5-V17T-~~P~~00004, Rev ~~1~~5 -M5-V17T-~~P~~20004, Rev ~~0~~1 -M6-HOP-00003001, Rev 0 -M6-HOP-00003002, Rev 0 -M6-HOP-20003001, Rev 0 -M6-HOP-20003002, Rev 0 -MVD-HOP-00015, Rev 3 -MVD-HOP-00016, Rev 3 -N1D-HOP-00003, Rev 1 -P1-P01T-00002, Rev 7 **24590-WTP** -3PS-MWK0-T0001, Rev 5	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HOP-HEME-00001A (Melter 1 High Efficiency Mist Eliminator, HEME) HOP-HEME-00001B (Melter 1 High Efficiency Mist Eliminator, HEME) HOP-HEME-00002A (Melter 2 High Efficiency Mist Eliminator, HEME) HOP-HEME-00002B (Melter 2 High Efficiency Mist Eliminator, HEME)	HOP	**24590-HLW** -M5-V17T-P0003, Rev 1 -M5-V17T-P20003, Rev 1 -M6-HOP-00009001, Rev 0 -M6-HOP-00009002, Rev 0 -M6-HOP-20009001, Rev 0 -M6-HOP-20009002, Rev 0 -MVD-HOP-00007, Rev 5 -MV-HOP-P0002001, Rev 0 -MV-HOP-P0002002, Rev 0 -MV-HOP-P0002003, Rev 0 -N1D-HOP-P0001, Rev 0 -P1-P01T-00002, Rev 7 -3YD-HOP-00001[a]	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.J.A – HLW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables, and Figures
Melter Offgas Treatment Process System (Cont.) HOP-SCO-00001 (Thermal Catalytic Oxidizer – located on Catalyst SkidHOP-SKID-00005) HOP-SCO-00004 (Thermal Catalytic Oxidizer – located on Catalyst Skid HOP-SKID-00007)	HOP	**24590-HLW** -M5-V17T-~~P~~00004, Rev ~~1~~5 -M5-V17T-20004, Rev ~~0~~1 -M6-HOP-00008001,Rev 0 -M6-HOP-00008002,Rev 0 -M6-HOP-00008003,Rev 0 -M6-HOP-20008001, Rev 0 -M6-HOP-20008002, Rev 0 -M6-HOP-20008003, Rev 0 -MKD-HOP-P0019, Rev 0 -MKD-HOP-P0020, Rev 0 -N1D-HOP-00004, Rev 5 -NID-HOP-P0005, Rev 1 -P1-PO1T-00002, Rev 7 -3PS-MBTV-T0002, Rev 1 **24590-LAW** -3PS-MBTV-T0001, Rev 1	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HOP-SCR-00001 (NOx Selective Catalytic Reducer – located on Catalyst Skid HOP-SKID-00005) HOP-SCR-00002 (NOx Selective Catalytic Reducer – located on Catalyst Skid HOP-SKID-00007)	HOP	**24590-HLW** -M5-V17T-~~P~~00004, Rev ~~1~~5 -M5-V17T-~~P~~20004, Rev ~~0~~1 -M6-HOP-00008001, Rev 0 -M6-HOP-00008002, Rev 0 -M6-HOP-00008003, Rev 0 - -M6-HOP-20008001, Rev 0 -M6-HOP-20008002, Rev 0 -M6-HOP-20008003, Rev 0- MKD-HOP-P0019, Rev 0 -MKD-HOP-P0020, Rev 0 -N1D-HOP-00004, Rev 5 -N1D-HOP-P0005, Rev 1 -P1-PO1T-00002, Rev 7 -3PS-MBTV-T0002, Rev 1 **24590-LAW** -3PS-MBTV-T0001, Rev 1	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HOP-HX-00001 (Catalyst Skid Preheater – located on Catalyst Skid HOP-SKID-00005)	HOP	**24590-HLW** -M5-V17T-~~P~~00004, Rev ~~1~~5 -M5-V17T-20004, Rev ~~0~~1 -M6-HOP-00008001, Rev 0 -M6-HOP-00008002, Rev 0 -M6-HOP-00008003, Rev 0	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.J.A – HLW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables, and Figures
HOP-HX-00003 (Catalyst Skid Preheater – located on Catalyst Skid HOP-SKID-00007)		-M6-HOP-20008001, Rev 0 -M6-HOP-20008002, Rev 0 -M6-HOP-20008003, Rev 0 -MKD-HOP-P0019, Rev 0 -MKD-HOP-P0020, Rev 0 -P1-PO1T-P0002, Rev 7 -3PS-MBTV-T0002, Rev 1 **24590-LAW** -3PS-MBTV-T0001, Rev 1	
Melter Offgas Treatment Process System (Cont.) HOP-HTR-00001 (Catalyst Skid Electric Heater – located on Catalyst Skid HOP-SKID-00005) HOP-HTR-00007 (Catalyst Skid Electric Heaters – located on Catalyst Skid HOP-SKID-00007)	HOP	**24590-HLW** -M5-V17T-~~P~~00004, Rev ~~1~~5 -M5-V17T-20004, Rev ~~0~~1 -M6-HOP-00008001, Rev 0 -M6-HOP-00008002, Rev 0 -M6-HOP-00008003, Rev 0 - -M6-HOP-20008001, Rev 0 -M6-HOP-20008002, Rev 0 -M6-HOP-20008003, Rev 0 -MKD-HOP-P0019, Rev 0 -MKD-HOP-P0020, Rev 0 -P1-PO1T-00002, Rev 7 -3PS-MBTV-T0002, Rev 1 - N1D-HOP-00011, Rev 0 **24590-LAW** -3PS-MBTV-T0001, Rev 1	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HOP-ABS-00002 (Silver Mordenite Column) HOP-ABS-00003 (Silver Mordenite Column)	HOP	**24590-HLW** -M5-V17T-~~P~~00004, Rev ~~1~~5 -M5-V17T-20004, Rev ~~0~~1 -M6-HOP-00008001, Rev 0 -M6-HOP-00008002, Rev 0 -M6-HOP-00008003, Rev 0 - -M6-HOP-20008001, Rev 0 -M6-HOP-20008002, Rev 0 -M6-HOP-20008003, Rev 0 -MKD-HOP-00014, Rev 5 -MKD-HOP-00017, Rev 7 -NID-HOP-P0006, Rev 1 -P1-P01T-00001, Rev 9 -3PS-MBT0-TP001, Rev 2	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.J.A – HLW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables, and Figures
Melter Offgas Treatment Process System (Cont.) HOP-HTR-00001B (HEPA Preheater) HOP-HTR-00002A (HEPA Preheater) HOP-HTR-00005A (HEPA Preheater) HOP-HTR-00005B (HEPA Preheater)	HOP	**24590-HLW** -M5-V17T-P0003, Rev 1 -M5-V17T-P20003, Rev 1 -M6-HOP-00010, Rev 3 -M6-HOP-20010, Rev 4 -MED-HOP-00013, Rev 4 -3PS-MEE0-T0001, Rev 1	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HOP-HX-00002 (Silver Mordenite Preheater) HOP-HX-00004 (Silver Mordenite Preheater)	HOP	**24590-HLW** -M5-V17T-~~P~~00004, Rev ~~1~~5 -M5-V17T-20004, Rev ~~0~~1 -M6-HOP-00003001, Rev 0 -M6-HOP-00003002, Rev 0 - -M6-HOP-20003001, Rev 0 -M6-HOP-20003002, Rev 0 -N1D-HOP-00007, Rev 1 -P1-P01T-00002, Rev 7	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HOP-FAN-00001A (Booster Extraction Fan) HOP-FAN-00001B (Booster Extraction Fan) HOP-FAN-00001C (Booster Extraction Fan) HOP-FAN-00009A (Booster Extraction Fan) HOP-FAN-00009B (Booster Extraction Fan) HOP-FAN-00009C (Booster Extraction Fan)	HOP	**24590-HLW** -M5-V17T-~~P~~00004, Rev ~~1~~5 -M5-V17T-20004, Rev ~~0~~1 -M6-HOP-00003001, Rev 0 -M6-HOP-00003002, Rev 0 -M6-HOP-20003001, Rev 0 -M6-HOP-20003002, Rev 0 -MAD-HOP-P0018, Rev 2 -P1-P01T-00001, Rev 9 **24590-WTP** -3PS-MACS-TP004, Rev 0	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.J.A – HLW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables, and Figures
Melter Offgas Treatment Process System (Cont.) HOP-FAN-00008A (Stack Extraction Fan) HOP-FAN-00008B (Stack Extraction Fan) HOP-FAN-00008C (Stack Extraction Fan) HOP-FAN-000010A (Stack Extraction Fan) HOP-FAN-000010B (Stack Extraction Fan) HOP-FAN-000010C (Stack Extraction Fan)	HOP	**24590-HLW** -M5-V17T-~~P~~00004, Rev ~~1~~5 -M5-V17T-20004, Rev ~~0~~1 -M6-HOP-00008001, Rev 0 -M6-HOP-00008002, Rev 0 -M6-HOP-00008003, Rev 0 -M6-HOP-20008001, Rev 0 -M6-HOP-20008002, Rev 0 -M6-HOP-20008003, Rev 0 -MAD-HOP-00038, Rev 5 -P1-P01T-00005, Rev 6 **24590-WTP** -3PS-MACS-TP004, Rev 0	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HLW Stack	HOP	**24590-HLW** -M5-V17T-~~P~~00004, Rev ~~1~~5 -M5-V17T-20004, Rev ~~0~~1 -M6-HOP-00008001, Rev 0 -M6-HOP-00008002, Rev 0 -M6-HOP-00008003, Rev 0 -M6-HOP-20008001, Rev 0 -M6-HOP-20008002, Rev 0 -M6-HOP-20008003, Rev 0	Section 4.1.4.3; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Pulse Jet Ventilation System PJV-HTR-00002 (Pulse Jet Ventilation HEPA Electric Preheater) PJV-HEPA-00004B (PJV System HEPA Filter (Standby Primary)) PJV-HEPA-00005B (PJV System HEPA Filter (Standby Secondary)) PJV-HEPA-00004A (PJV System HEPA Filter (Primary)) PJV-HEPA-00005A (PJV System HEPA	PJV	**24590-HLW** -M6-PJV-00001001, Rev 0 -M6-PJV-00002001, Rev 0	

Quarter Ending 12/31/2013

24590-HLW-PCN-ENV-13-012

Hanford Facility RCRA Permit Modification Notification Form
Part III, Operating Unit 10
Waste Treatment and Immobilization Plant

Index

Page 2 of 3: Hanford Facility RCRA Permit, Part III, Operating Unit 10, Waste Treatment and Immobilization Plant
Update High-Level Waste (HLW) Vitrification Building Piping and Instrumentation Diagrams (P&ID) for the HLW Canister Decontamination Handling (HDH) System in Appendix 10.2 of the Dangerous Waste Permit.

Submitted by Co-Operator:

D. M. Busche — 11/26/2013 Date

GRANT W. RYAN for

Reviewed by ORP Program Office:

D. L. Noyes — 12/19/13 Date

Quarter Ending 12/31/2013

24590-HLW-PCN-ENV-13-012

Hanford Facility RCRA Permit Modification Notification Form	
Unit: **Waste Treatment and Immobilization Plant**	Permit Part: **Part III, Operating Unit 10**

Description of Modification:

The purpose of this Class 1 modification is to update the following Piping and Instrumentation Diagrams (P&ID) for the HLW Canister Decontamination Handling (HDH) System. The following P&IDs are submitted to replace those currently in Appendix 10.2.

Appendix 10.2			
Replace:	24590-HLW-M6-HDH-00001001, Rev. 0	With:	24590-HLW-M6-HDH-00001001, Rev. 1
	24590-HLW-M6-HDH-00002001, Rev. 0		24590-HLW-M6-HDH-00002001, Rev. 1
	24590-HLW-M6-HDH-00002003, Rev. 0		24590-HLW-M6-HDH-00002003, Rev. 1
	24590-HLW-M6-HDH-20001001, Rev. 0		24590-HLW-M6-HDH-20001001, Rev. 1

The referenced P&IDs have been revised and they incorporate changes associated with the resolution to comments on the P&IDs since the issuance of the last revision of the permitted drawing. This modification requests Ecology acceptance and incorporation into the permit, the specific changes to these P&IDs that are indicated by revision notes and clouds. Revisions are the result of ongoing design changes. The following identifies the types of changes on the attached drawings:

24590-HLW-M6-HDH-00001001

- Deleted and added notes
- Replaced gate valve with ball valve (on instrument airline)
- Changed depiction of instrument piping material to standard bubbler configuration
- Revised an off-sheet connector description

24590-HLW-M6-HDH-00002001

- Added new notes
- Replaced gate valves with ball valves (on utility/support system lines)
- Revised various off-sheet connector descriptions

24590-HLW-M6-HDH-00002003

- Added new notes
- Revised an off-sheet connector description

24590-HLW-M6-HDH-20001001

- Added new notes and holds
- Replaced gate valves with ball valves (on utility/support system/instrument lines)
- Changed depiction of instrument piping material to standard bubbler configuration
- Switched position of joggle nozzles
- Added valve description "FC" meaning "valve fails closed"
- Added welded cap details on product supply lines

This PCN updates information in Appendix 10.2 to reflect current design. This DWP component may be re-evaluated to confirm design adequacy. If the re-evaluation results in future design changes, the changes will be reviewed by Ecology in subsequent permit modifications.

Quarter Ending 12/31/2013

24590-HLW-PCN-ENV-13-012

The following outstanding change documents have been submitted to Ecology pursuant to permit condition III.10.C.9.h and are maintained in the WTP Operating Record.
None

In accordance with Permit Condition III.10.C.2.e, this permit modification sent to Ecology may include page changes to the Permit, attachments, and permit application supporting documentation.

WAC 173-303-830 Modification Class:	Class 1	Class [1]1	Class 2	Class 3
Please mark the Modification Class:	X			

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A1 and A3

Enter wording of WAC 173-303-830, Appendix I Modification citation:

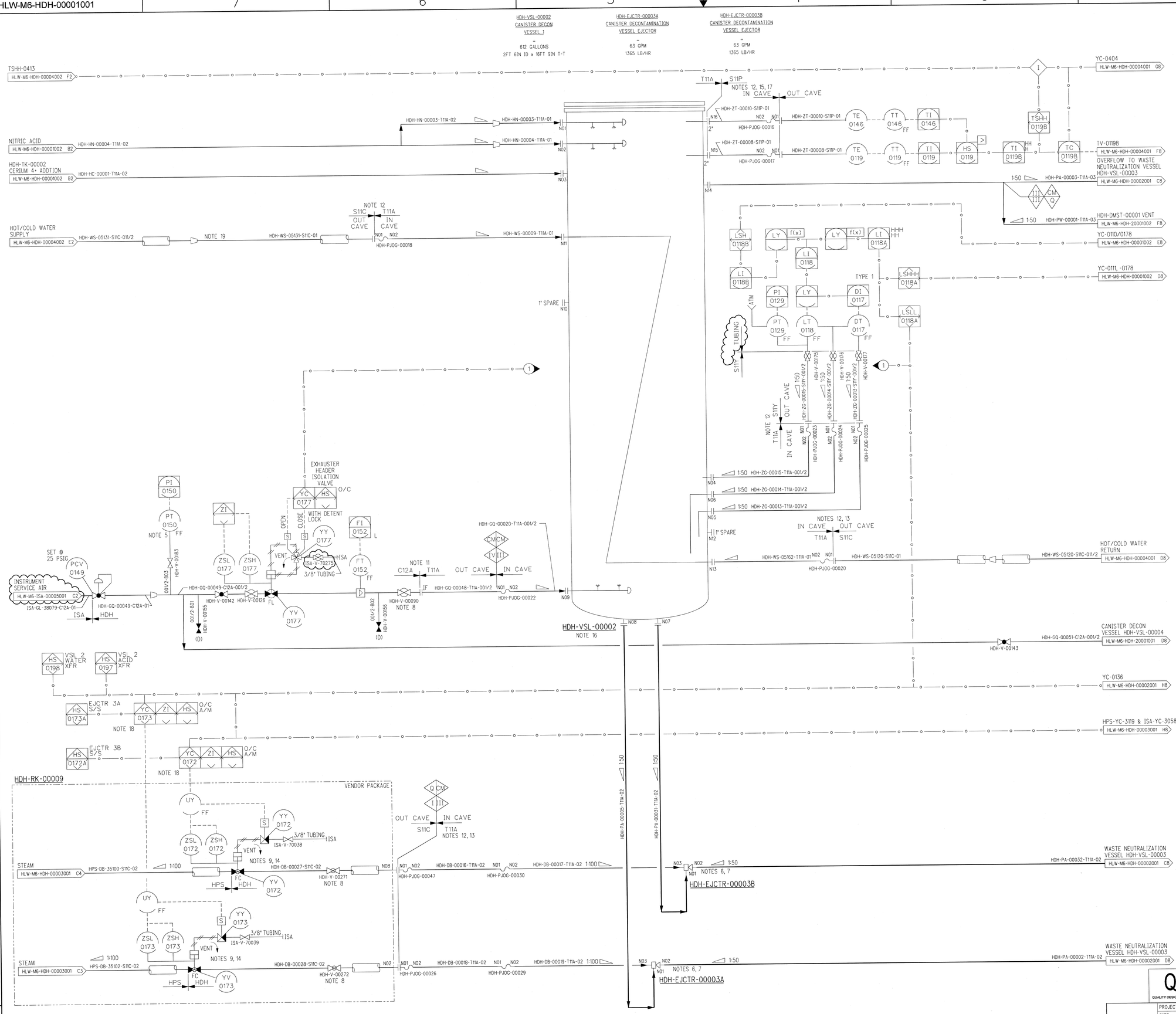
A. General Permit Provisions
1. Administrative and informational changes
3. Equipment replacement or upgrading with functionally equivalent components (e.g., pipes, valves, pumps, conveyors, controls)

Modification Approved/Concur: ☑ Yes ☐ Denied (state reason below)

Reason for denial:

Reviewed by Ecology:

S. Dahl 1/22/14 Date



NOTES:

1. SEE DRAWINGS 24590-WTP-M6-50-00001 THROUGH 24590-WTP-M6-50-00008 FOR GENERAL NOTES, SYMBOLS AND LEGEND AND GENERAL SLOPE REQUIREMENTS.
2. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
3. THE PRESSURE BOUNDARY FOR ALL COMPONENTS ON THIS DRAWING IS QUALITY LEVEL CM AND SEISMIC CATEGORY SC-III, UNLESS OTHERWISE NOTED.
4. ALL LINES SHOWN ON THIS DRAWING SHALL BE FREE DRAINING, UNLESS OTHERWISE NOTED.
5. LOCATE PRESSURE TRANSMITTER (PT-0150) CLOSE TO PRESSURE REGULATING VALVE (PCV-0149).
6. THE HIGHEST SECTION OF THE EJECTOR DISCHARGE LINES TO BE ABOVE OVERFLOW NOZZLE ELEVATION OF HDH-VSL-00002.
7. EJECTOR DISCHARGE PIPING TO HAVE A MINIMUM LENGTH OF STRAIGHT PIPE EQUIVALENT TO 10 TIMES THE PIPE OUTSIDE DIAMETER BEFORE THE FIRST BEND.
8. LOCATE VALVE WITHIN 3 FEET OF IN-CAVE BOUNDARY.
9. THE VALVE SHALL BE A SLOW OPENING VALVE TO PREVENT STEAM CONDENSATE HAMMER.
10. DELETED
11. A FLANGE KIT IS REQUIRED BETWEEN CARBON STEEL AND TITANIUM FLANGES TO PREVENT GALVANIC CORROSION.
12. A HELICOFLEX GASKET IS TO BE UTILIZED AT THE FLANGE INTERFACE BETWEEN STAINLESS STEEL AND TITANIUM.
13. LINES REQUIRE 34FT OF BAROMETRIC HEAD ABOVE THE OVERFLOW. THE BAROMETRIC HEAD REQUIREMENT SHALL BE FULLY CONTAINED IN R5 AREA.
14. ACTUATED STEAM SUPPLY VALVE TO BE LOCATED AT HIGH POINT IN THE LINE.
15. LID DESIGN REQUIRES AIR GAP FOR HPAV.
16. THIS IS A CANISTER DECON VESSEL SYMBOL.
17. USE REDUCING FLANGE FOR CONNECTION TO NOZZLES N15 AND N16.
18. ICN INTERLOCK CLOSES HDH-YV-0172, -0173 AND STOPS HDH-PMP-00001 ON HDH-TSHH-0126 OR HDH-LSHH-0125A.
19. MAIN HEADER REQUIRES 34 FT OF BAROMETRIC HEAD ABOVE THE MAXIMUM LIQUID LEVEL IN THE VESSEL.
20. THIS DRAWING IS CONVERTED FROM A SINGLE SHEET TO MULTI-SHEET DRAWINGS AND, IN PART, SUPERSEDES 24590-HLW-M6-HDH-00001 REV 5. THIS DRAWING INCLUDES INFORMATION FROM 24590-HLW-M6N-HDH-00021, -00039, -00040, -00055, 24590-HLW-M6PR-HDH-00002, 24590-HLW-M6LN-30-00001, AND 24590-WTP-SDDR-MS-07-00046.
21. REVISION 1: REVISED DEPICTION OF C&I SUPPLIED VALVE FROM GATE TO BALL. ADDED/REVISED/DELETED NOTE AND OFF SHEET CONNECTOR. THIS P&ID HAS BEEN REVIEWED BY E&NS FOR ALL LIMITED AND PHYSICALIZATION CHANGE DOCUMENTS THAT WERE PREVIOUSLY ISSUED (SEE CCN 255808).

HOLD/OPEN ITEMS:

NONE

REFERENCES:

1. 24590-HLW-3YD-HDH-00002, SYSTEM DESCRIPTION FOR THE HLW SYSTEM HDH CANISTER DECONTAMINATION HANDLING SYSTEM.
2. 24590-HLW-M5-V17T-00006, PROCESS FLOW DIAGRAM HLW VITRIFICATION HLW CANISTER DECON (SYSTEM HDH).
3. 24590-WTP-3PS-JXF0-T0001, ENGINEERING SPECIFICATION FOR INSTRUMENT PIPING MATERIAL CLASSES.

Please note that source, special nuclear, and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA) are regulated at the U. S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts that pursuant to AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

DRAWING INDEX

DWG NO	TITLE
24590-HLW-M6-HDH-00001001	HDH SYSTEM HDH-VSL-00002
24590-HLW-M6-HDH-00001002	HDH SYSTEM

REVISION HISTORY

REV	DESCRIPTION	ORG	CHKD	RVWD	APVD	DATE
1	REVISED PER NOTE 21	APP	RR	JL/RS	TH/RK	7/11/13
0	ISSUED FOR CONSTRUCTION, SEE NOTE 20	ZAC	NTJ	RP/SS	SK/MB	5/26/11

Q QUALITY DESIGNATOR

ISSUED BY RPPWTP PDC

ISSUE STAMP		
PROJECT No.	24590	
SITE	HANFORD	
AREA	200E	
BUILDING No.	30	
	BY	DATE
ORIGINATOR	CROSS, ZACHARY A	5/26/11
CHECKER	JOHNSON, NGA T	5/26/11
APPROVER	KRETZSCHMAR,S/BRACCIA	5/26/11
REVIEWER	R PETERS/ S SMITH	5/26/11

CONTENT APPLICABLE TO ALARA? [X] YES [ ] NO
ADR NO. 24590-HLW-ADR-M-02-021 REV: 4
EMS SCREENING REQUIRED? [X] YES [ ] NO EMS INITIAL IF YES

BECHTEL

RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
2435 STEVENS CENTER PLACE
RICHLAND, WA 99354

CONTRACT No: DE-AC27-01RV14136

P&ID - HLW HLW CANISTER DECONTAMINATION HANDLING SYSTEM HDH-VSL-00002

SCALE: NONE

24590-HLW-M6-HDH-00001001

REV 1

SCREENING IS REQUIRED FOR DRAWING TYPES IDENTIFIED IN 24590-WTP-GPP-SREG-002

'E' SIZE - 44x34
COMPUTER GENERATED - MANUAL DESIGN CHANGES NOT PERMITTED

R11602655

7/11/2013 8:49:16 AM

PLOTTED BY: gpoakes C:\Work\gpoakes\dms03839\HLW\M6\HDH00001001.dgn

FORM E_SDN.DGN 02/2009

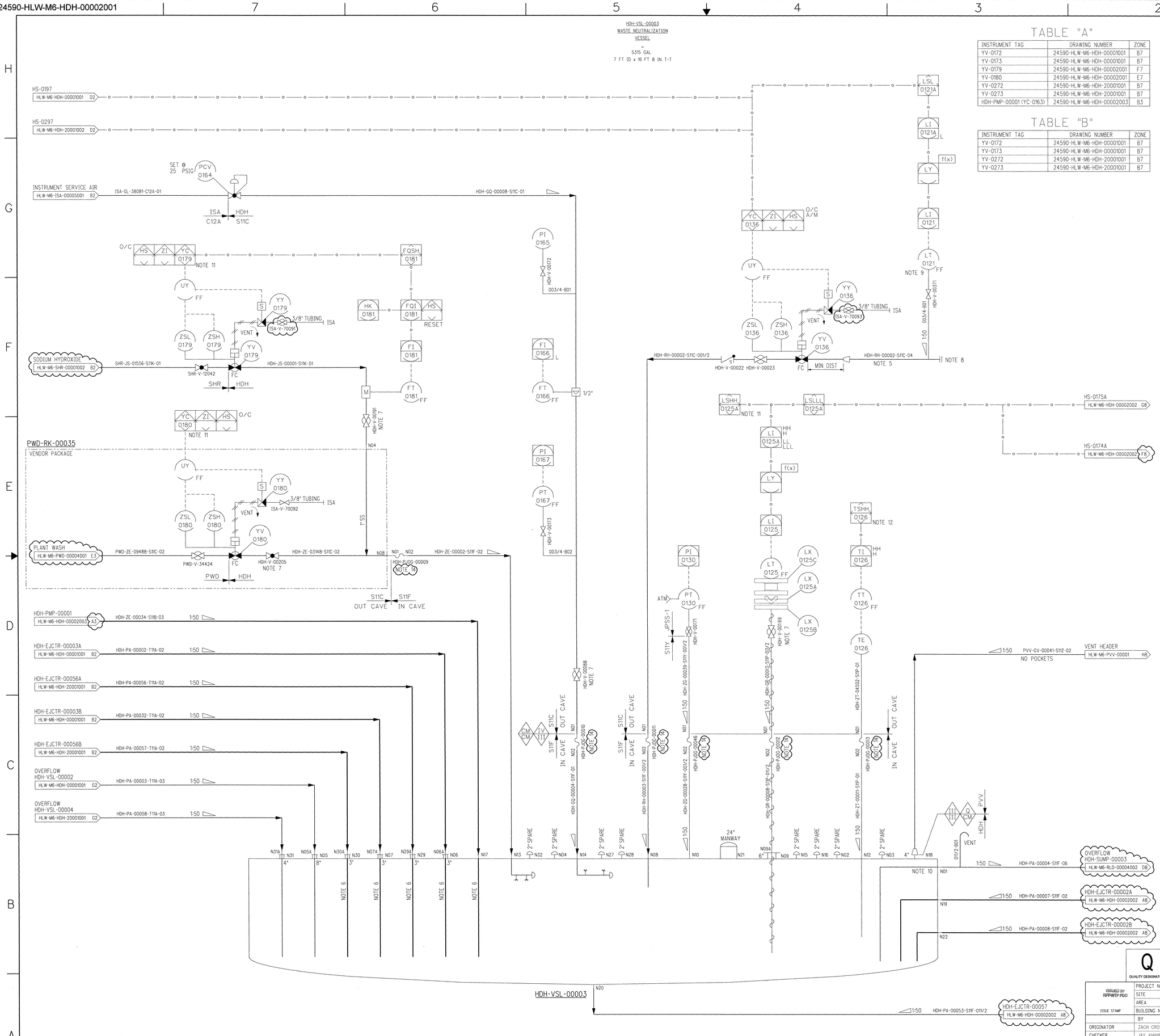


TABLE "A"

INSTRUMENT TAG	DRAWING NUMBER	ZONE
YV-0172	24590-HLW-M6-HDH-00001001	B7
YV-0173	24590-HLW-M6-HDH-00001001	B7
YV-0179	24590-HLW-M6-HDH-00002001	F7
YV-0180	24590-HLW-M6-HDH-00002001	E7
YV-0272	24590-HLW-M6-HDH-20001001	B7
YV-0273	24590-HLW-M6-HDH-20001001	B7
HDH-PMP-00001 (YC-0163)	24590-HLW-M6-HDH-00002003	B3

TABLE "B"

INSTRUMENT TAG	DRAWING NUMBER	ZONE
YV-0172	24590-HLW-M6-HDH-00001001	B7
YV-0173	24590-HLW-M6-HDH-00001001	B7
YV-0272	24590-HLW-M6-HDH-20001001	B7
YV-0273	24590-HLW-M6-HDH-20001001	B7

NOTES:

1. SEE DRAWINGS 24590-WTP-M6-50-00001 THROUGH 24590-WTP-M6-50-00008 FOR GENERAL NOTES, SYMBOLS AND LEGEND, AND GENERAL SLOPE REQUIREMENTS.
2. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
3. THE PRESSURE BOUNDARY FOR ALL COMPONENTS ON THIS DRAWING IS QUALITY LEVEL CM AND SEISMIC CATEGORY SC-III, UNLESS OTHERWISE NOTED.
4. ALL LINES SHOWN ON THIS DRAWING SHALL BE FREE DRAINING, UNLESS OTHERWISE NOTED.
5. HYDROGEN PEROXIDE ADDITION POINT. THE VERTICAL FOUR-INCH DIAMETER PIPE SECTION IS 18 INCHES LONG. LOCATE BLIND FLANGE APPROXIMATELY 42 INCHES FROM FLOOR.
6. DRILL NOMINAL 3/8 INCH HOLE IN EACH OF THE PIPES WHERE INDICATED. THIS HOLE SHALL BE LOCATED IN THE VESSEL HEAD SPACE ABOVE THE OVERFLOW LEVEL OF THE VESSEL. THE HOLE IS TO PREVENT BACK SIPHON.
7. LOCATE VALVE WITHIN 3 FEET OF THE CAVE BOUNDARY.
8. PROVIDE A HANDLE ON THE 4 INCH STAINLESS STEEL BLIND FLANGE FOR EASY ROTATION. BLIND IS TO HAVE ONE STUD BOLT HAND TIGHTENED TO HOLD THE FLANGE IN PLACE WHILE ALLOWING THE BLIND TO SWING OPEN AS NEEDED.
9. LEVEL TRANSMITTER HAS INTEGRAL LEVEL INDICATOR. MOUNT SO INDICATOR IS VISIBLE TO OPERATOR WHEN FILLING STANDPIPE.
10. INLET ELEVATION OF OVERFLOW LINE SHALL BE 4 INCHES LOWER THAN THAT OF EJECTOR SUCTION FOR HDH-EJCTR-00002A/B.
11. ICN INTERLOCK CLOSES YV-0172/0173/0179/0180/0272/0273 AND STOPS HDH-PMP-00001 ON HDH-VSL-00003 HI HI LEVEL. SEE TABLE "A".
12. ICN INTERLOCK CLOSES YV-0172/0173/0272/0273 ON HDH-VSL-00003 HI HI TEMP. SEE TABLE "B".
13. THIS DRAWING IS CONVERTED FROM A SINGLE SHEET TO MULTI -SHEET DRAWINGS AND IN PART, SUPERSEDES 24590-HLW-M6-HDH -00002 REV 5. THIS DRAWING INCLUDES 24590-HLW-M6LN-HDH-00003, -00005, 24590-HLW-M6N-30-00007, -00008, -00011, 24590-HLW-M6N-HDH-00021, -00034, -00041, -00054, -00055, AND 24590-HLW-M6PR-HDH-00002.
14. THE GEOMETRY OF JOGGLED (OFFSET) PENETRATION IS QUALITY LEVEL Q FOR RADIATION PROTECTION. THE QUALITY LEVEL AND SEISMIC CATEGORY DESIGNATIONS OF PIPING WITHIN JOGGLES ARE THE SAME AS CONNECTING PIPING, UNLESS OTHERWISE SHOWN OR NOTED. PIPING WITHIN SPARE JOGGLES IS QUALITY LEVEL Q AND SEISMIC CATEGORY SC-I.
15. REVISION 1: REVISED DEPICTION OF C&I SUPPLIED VALVE FROM GATE TO BALL. ADDED/REVISED NOTES AND OFF SHEET CONNECTORS. THIS P&ID HAS BEEN REVIEWED BY E&NS FOR ALL LIMITED AND PHYSICALIZATION CHANGE DOCUMENTS THAT WERE PREVIOUSLY ISSUED (SEE CCN 255808).

HOLD/OPEN ITEMS:

NONE

REFERENCES:

1. 24590-HLW-3YD-HDH-00002, SYSTEM DESCRIPTION FOR THE HLW SYSTEM HDH CANISTER DECONTAMINATION HANDLING.

Please note that source, special nuclear, and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA) are regulated at the U. S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts that pursuant to AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

DRAWING INDEX

DWG NO	TITLE
24590-HLW-M6-HDH-00002001	HDH SYSTEM HDH-VSL-00003
24590-HLW-M6-HDH-00002002	HDH SYSTEM TRANSFER EJECTORS
24590-HLW-M6-HDH-00002003	HDH SYSTEM HDH-TRLY-00003

Q
QUALITY DESIGNATOR

REVISION HISTORY

REV	DESCRIPTION	ORG	CHKD	RVWD	APVD	DATE
1	REVISED PER NOTE 15	PP	RG	JL/RS	SS/SPK	8/12/13
0	ISSUED FOR CONSTRUCTION, SEE NOTE 13	ZAC	JUK	RP/SS	SK/MB	5/26/11

ISSUED BY RPP-WTP PDG

ISSUE STAMP

PROJECT No.	24590	
SITE	HANFORD	
AREA	200E	
BUILDING No.	30	
	BY	DATE
ORIGINATOR	ZACH CROSS	5/26/11
CHECKER	JAY KHANDHAR	5/26/11
APPROVER	KRETZSCHMAR,S/BRACCIA	5/26/11
REVIEWER	R PETERS/ S SMITH	5/26/11

CONTENT APPLICABLE TO ALARA? [X] YES [ ] NO
ADR NO. 24590-HLW-ADR-M-02-021 REV: 4
E&NS SCREENING REQUIRED? [X] YES [ ] NO E&NS INITIAL IF YES

RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
2435 STEVENS CENTER PLACE
RICHLAND, WA 99354

CONTRACT No: DE-AC27-01RV14136

P&ID - HLW HLW CANISTER DECONTAMINATION HANDLING SYSTEM HDH-VSL-00003

SCALE: NONE

24590-HLW-M6-HDH-00002001

REV 1

SCREENING IS REQUIRED FOR DRAWING TYPES IDENTIFIED IN 24590-WTP-GPP-SREG-002

"E" SIZE - 44x34
COMPUTER GENERATED - MANUAL DESIGN CHANGES NOT PERMITTED

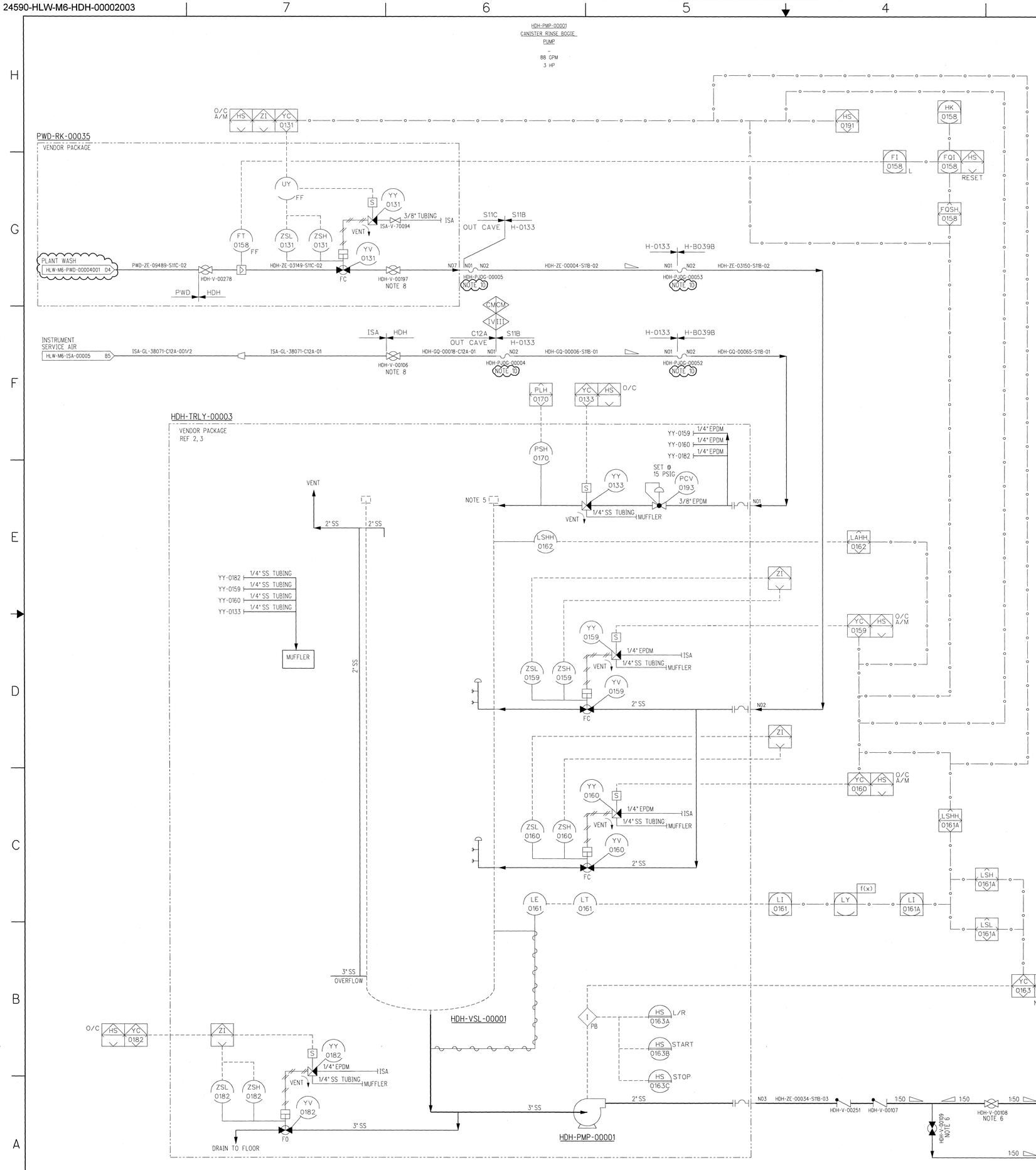
R11604370

7/30/2013 6:58:15 AM

PLOTTED BY: gpookes

C:\Work\gpookes.dmo\38319\HLW\HDH\00002001.dgn

FORM E_SDN.DGN 02/2009



NOTES:

1. SEE DRAWINGS 24590-WTP-M6-50-00001 THROUGH 24590-WTP-M6-50-00008 FOR GENERAL NOTES, SYMBOLS AND LEGEND, AND GENERAL SLOPE REQUIREMENTS.
2. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
3. THE PRESSURE BOUNDARY FOR ALL COMPONENTS ON THIS DRAWING IS QUALITY LEVEL CM AND SEISMIC CATEGORY SC-III, UNLESS OTHERWISE NOTED.
4. ALL LINES SHOWN ON THIS DRAWING SHALL BE FREE DRAINING, UNLESS OTHERWISE NOTED.
5. AN INFLATABLE SEAL IS INSTALLED AT THE TOP OF THE CONTAINER.
6. VALVE TO BE LOCATED NEAR THE SHIELD DOOR TO ALLOW FOR OPERATOR'S MANUAL OPERATION AT THE SHIELD DOOR OPENING.
7. ICN INTERLOCK CLOSES YV-0172/0173/0179/0180/0272/0273 AND STOPS HDH-PMP-00001 ON HDH-VSL-00003 HI HI LEVEL.
8. LOCATE VALVE WITHIN 3 FEET OF CAVE BOUNDARY.
9. THIS DRAWING IS CONVERTED FROM A SINGLE SHEET TO MULTI-SHEET DRAWINGS AND, IN PART, SUPERSEDES 24590-HLW-M6-HDH-00002 REV 5. THIS DRAWING INCLUDES INFORMATION FROM 24590-HLW-M6LN-30-00004, 24590-HLW-M6LN-HDH-00001, 24590-HLW-M6N-HDH-00032, AND -00041.
10. THE GEOMETRY OF JOGGLED (OFFSET) PENETRATION IS QUALITY LEVEL Q FOR RADIATION PROTECTION. THE QUALITY LEVEL AND SEISMIC CATEGORY DESIGNATIONS OF PIPING WITHIN JOGGLES ARE THE SAME AS CONNECTING PIPING, UNLESS OTHERWISE SHOWN OR NOTED. PIPING WITHIN SPARE JOGGLES IS QUALITY LEVEL Q AND SEISMIC CATEGORY SC-I.
11. REVISION 1: ADDED/REVISED NOTE AND OFF SHEET CONNECTOR. THIS P&ID HAS BEEN REVIEWED BY E&NS FOR ALL LIMITED AND PHYSICALIZATION CHANGE DOCUMENTS THAT WERE PREVIOUSLY ISSUED (SEE CCN 255808).

HOLD/OPEN ITEMS:

NONE

REFERENCES:

1. 24590-HLW-3YD-HDH-00002, SYSTEM DESCRIPTION FOR THE HLW SYSTEM HDH CANISTER DECONTAMINATION HANDLING.
2. 24590-QL-POA-MQTS-00002-01-127, DRAWING-DECONTAMINATION VESSEL ASSEMBLY.
3. 24590-QL-POA-MQTS-00002-01-00222, DRAWING-CANISTER RINSE BOGIE PNEUMATIC SYSTEM SCHEMATIC.

Please note that source, special nuclear, and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA) are regulated at the U. S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts that pursuant to AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

REV	DESCRIPTION	ORG	CHKD	RVWD	APVD	DATE
1	REVISED PER NOTE 11	PP	RG	JL/RS	SS/	8/12/13
0	ISSUED FOR CONSTRUCTION, SEE NOTE 9	ZAC	JUK	RP/SS	SK/MB	5/26/11

REVISION HISTORY

Q QUALITY DESIGNATOR

ISSUED BY RPP-WTP PDC

ISSUE STAMP

PROJECT No.	24590	
SITE	HANFORD	
AREA	200E	
BUILDING No.	30	
	BY	DATE
ORIGINATOR	ZACH CROSS	5/23/11
CHECKER	JAY KHANDHAR	5/23/11
APPROVER	S KRETZSCHMAR/BRACCIA	5/26/11
REVIEWER	R PETERS/S SMITH	5/25/11

CONTENT APPLICABLE TO ALARA? [X] YES [ ] NO

ADR NO. 24590-HLW-ADR-M-02-021 REV: 4

E&NS SCREENING REQUIRED? [X] YES [ ] NO E&NS INITIAL IF YES

RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
2435 STEVENS CENTER PLACE
RICHLAND, WA 99354

CONTRACT No: DE-AC27-01RV14136

P&ID - HLW HLW CANISTER DECONTAMINATION HANDLING SYSTEM HDH-TRLY-00003

SCALE: NONE

24590-HLW-M6-HDH-00002003

REV 1

SCREENING IS REQUIRED FOR DRAWING TYPES IDENTIFIED IN 24590-WTP-GPP-SREQ-002

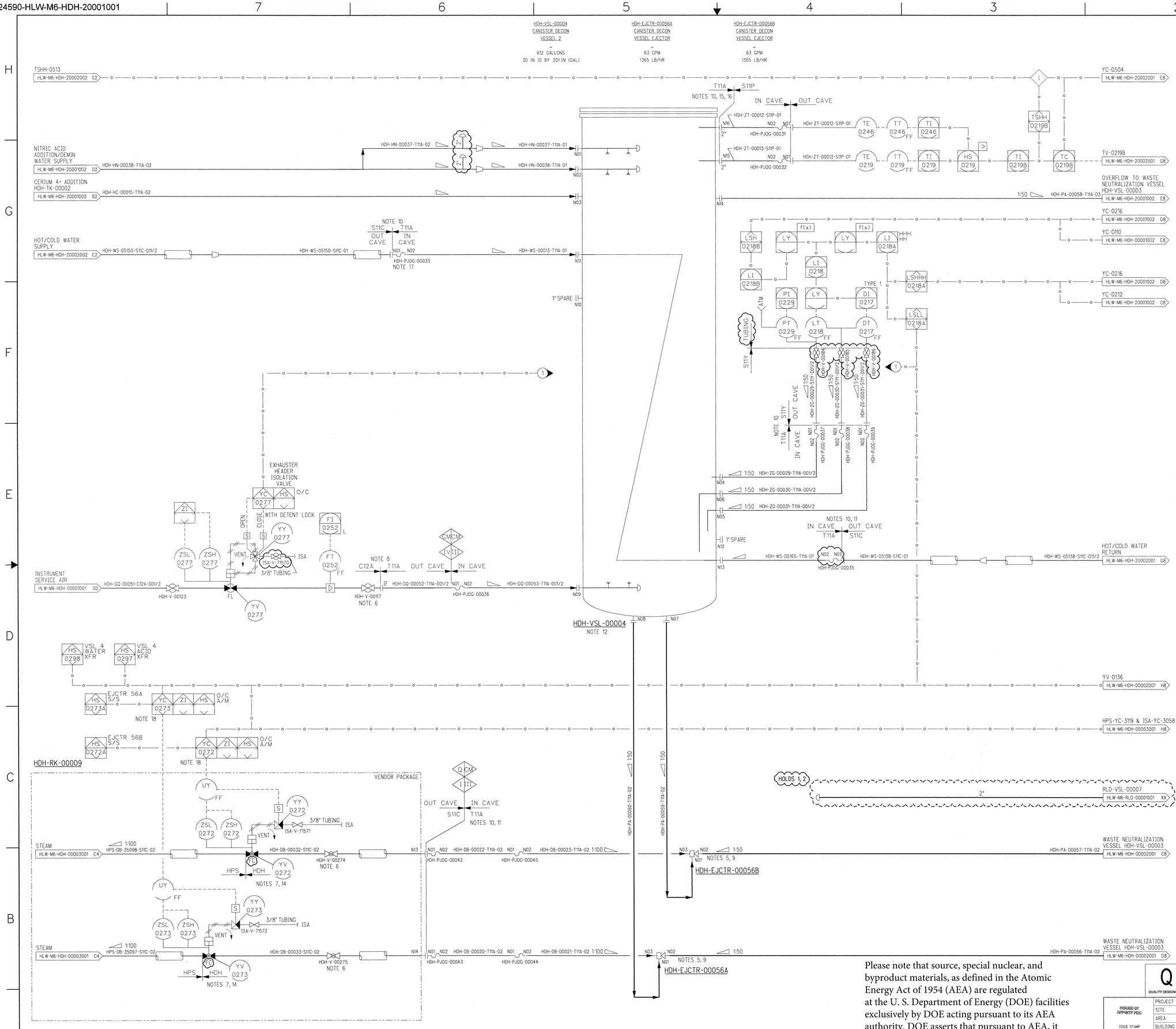
"E" SIZE - 44x34
COMPUTER GENERATED - MANUAL DESIGN CHANGES NOT PERMITTED

R11604371

7/30/2013 11:07:16 AM

PLOTTED BY: rpeakes C:\Work\rpeakes\dmo13535\HLW\M6\HDH00002003.dgn

FORM E_SDN.DGN 02/2009



NOTES:

1. SEE DRAWINGS 24590-WTP-M6-50-00001 THROUGH 24590-WTP-M6-50-00008 FOR GENERAL NOTES, SYMBOLS AND LEGEND, AND GENERAL SLOPE REQUIREMENTS.
2. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
3. THE PRESSURE BOUNDARY FOR ALL COMPONENTS ON THIS DRAWING IS QUALITY LEVEL CM AND SEISMIC CATEGORY SC-III, UNLESS OTHERWISE NOTED.
4. ALL LINES SHOWN ON THIS DRAWING ARE FREE DRAINING, UNLESS OTHERWISE NOTED.
5. EJECTOR DISCHARGE PIPING TO HAVE A MINIMUM LENGTH OF STRAIGHT PIPE EQUIVALENT TO 10 TIMES THE PIPE OUTSIDE DIAMETER BEFORE FIRST BEND.
6. LOCATE VALVE WITHIN 3 FEET OF THE IN-CAVE BOUNDARY.
7. THE VALVE SHALL BE A SLOW OPENING VALVE TO PREVENT STEAM CONDENSATE HAMMER.
8. A FLANGE KIT IS REQUIRED BETWEEN CARBON STEEL AND TITANIUM FLANGES TO PREVENT GALVANIC CORROSION.
9. THE HIGHEST SECTION OF THE EJECTOR DISCHARGE LINES TO BE ABOVE OVERFLOW NOZZLE ELEVATION OF HDH-VSL-00004.
10. A HELICOFLEX GASKET IS TO BE UTILIZED AT THE FLANGE INTERFACE BETWEEN STAINLESS STEEL AND TITANIUM.
11. LINES REQUIRE 34FT OF BAROMETRIC HEAD ABOVE THE OVERFLOW. THE BAROMETRIC HEAD REQUIREMENT SHALL BE FULLY CONTAINED IN R5 AREA.
12. THIS IS A CANISTER DECON VESSEL SYMBOL.
13. INSTRUMENTS ARE QUALITY LEVEL CM. INSTRUMENT, ROOT VALVE, AND TUBING CONFINEMENT REQUIREMENTS ARE THE SAME AS THE CONNECTING PIPING.
14. ACTUATED STEAM SUPPLY VALVE TO BE LOCATED AT HIGH POINT IN THE LINE.
15. LID DESIGN REQUIRES AIR GAP FOR HPAV.
16. USE REDUCING FLANGE FOR CONNECTIONS TO NOZZLES N15 AND N16.
17. MAIN HEADER REQUIRES 34 FT OF BAROMETRIC HEAD ABOVE THE MAXIMUM LIQUID LEVEL IN THE VESSEL.
18. ICN INTERLOCK CLOSES YC-0272/0273 ON HDH-TSHH-0126 OR HDH-LSHH-0125A.
19. THIS DRAWING IS CONVERTED FROM A SINGLE SHEET TO MULTI-SHEET DRAWINGS AND, IN PART, SUPERSEDES 24590-HLW-M6-HDH-20001 REV 4. THIS DRAWING INCLUDES INFORMATION FROM 24590-HLW-M6N-HDH-00021, -00039, -00043, -00055, 24590-HLW-M6PR-HDH-00002, AND 24590-HLW-M6LN-30-00001.
20. THE GEOMETRY OF JOGGLED (OFFSET) PENETRATION IS QUALITY LEVEL Q FOR RADIATION PROTECTION. THE QUALITY LEVEL AND SEISMIC CATEGORY DESIGNATIONS OF PIPING WITHIN JOGGLES ARE THE SAME AS CONNECTING PIPING, UNLESS OTHERWISE SHOWN OR NOTED. PIPING WITHIN SPARE JOGGLES IS QUALITY LEVEL Q AND SEISMIC CATEGORY SC-I.
21. REVISION 1: REVISED DEPICTION OF C&I SUPPLIED VALVE FROM GATE TO BALL. REVISED/ADDED NOTE, LINE BRANCH, AND NOZZLE NUMBER. THIS P&ID HAS BEEN REVIEWED BY E&NS FOR ALL LIMITED AND PHYSICALIZATION CHANGE DOCUMENTS THAT WERE PREVIOUSLY ISSUED (SEE CCN 255808).

HOLD/OPEN ITEMS:

1. PIPING ON HOLD PENDING FULL IMPLEMENTATION OF RLD REDESIGN.
2. PIPING ON HOLD PENDING RESOLUTION OF FMECA REDUNDANCY ANALYSIS FOR THE HDH SYSTEM AND SUBSEQUENT DESIGN EVOLUTION.

REFERENCES:

1. 24590-HLW-3YD-HDH-00002, SYSTEM DESCRIPTION FOR HLW SYSTEM HDH CANISTER DECONTAMINATION HANDLING SYSTEM.
2. 24590-HLW-M5-V17T-00006, PROCESS FLOW DIAGRAM HLW VITRIFICATION HLW CANISTER DECON (SYSTEM HDH).
3. 24590-WTP-3PS-JXF0-T0001, ENGINEERING SPECIFICATION FOR INSTRUMENT PIPING MATERIAL CLASSES.

DRAWING INDEX

DWG NO	TITLE
24590-HLW-M6-HDH-20001001	HDH SYSTEM HDH-VSL-00004
24590-HLW-M6-HDH-20001002	HDH SYTEM HDH-DMST-00001

REVISION HISTORY

REV	DESCRIPTION	ORG	CHKD	RVWD	APVD	DATE
1	REVISED PER NOTE 21	PP	TH	RS/RS	SS/WK	9/9/13
0	ISSUED FOR CONSTRUCTION, SEE NOTE 19	ZAC	NTJ	RP/SS	SK/MB	5/26/11

Q
QUALITY DESIGNATOR

ISSUED BY RPP/WTP PDC

PROJECT No.	24590
SITE	HANFORD
AREA	200E
BUILDING No.	30

ISSUE STAMP

	BY	DATE
ORIGINATOR	ZACH CROSS	5/26/11
CHECKER	NGA JOHNSON	5/26/11
APPROVER	KRETZSCHMAR,S/BRACCIA	5/26/11
REVIEWER	R PETERS/S SMITH	5/26/11

CONTENT APPLICABLE TO ALARA? [X] YES [ ] NO
ADR NO. 24590-HLW-ADR-M-02-021 REV: 4
EMS SCREENING REQUIRED? [X] YES [ ] NO EMS INITIAL IF YES: MK

RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
2435 STEVENS CENTER PLACE
RICHLAND, WA 99354

CONTRACT No: DE-AC27-01RV14136

P&ID - HLW HLW CANISTER DECONTAMINATION HANDLING SYSTEM HDH-VSL-00004

SCALE: NONE

24590-HLW-M6-HDH-20001001

REV 1

R11610951

Please note that source, special nuclear, and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA) are regulated at the U. S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts that pursuant to AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

Table III.10.E.C – HLW Vitrification Plant Tank Systems Description

Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
HLW Canister Decontamination Handling System HDH-VSL-00001 (Canister Rinse Vessel) HDH-VSL-00002 (Canister Decon Vessel 1) HDH-VSL-00003 (Waste Neutralization Vessel) HDH-VSL-00004 (Canister Decon Vessel 2)	HDH	**24590-HLW** -M5-V17T-00006, Rev 6 -M6-HDH-00001001, Rev ~~0~~1 -M6-HDH-00002001, Rev ~~0~~1 -M6-HDH-00002002, Rev 0 -M6-HDH-00002003, Rev ~~0~~1 -M6-HDH-20001001, Rev ~~0~~1 -M6-HDH-20001002, Rev 0 -M0-HDH-P0012001, Rev 1 -M0-HDH-P0012002, Rev 1 -MV-HDH-P0003, Rev 1 -MVD-HDH-P0003, Rev 2 -MVD-HDH-00006, Rev 5 -MVD-HDH-P0009, Rev 0 -N1D-HDH-~~P0003~~-00003, Rev ~~1~~8 -N1D-HDH-P0005, Rev 1 -N1D-HDH-P0007, Rev 1 -P1-P01T-00001, Rev 9 -P1-P01T-00002, Rev 7 -3YD-HDH-00002[a] **24590-WTP** -3PS-G000-T0002, Rev 8 -3PS-MV00-T0001, Rev4 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3	Section 4.1.4.7; Tables 4-4 and 4-6; Figures C1-1 and C1-4 of Operating Unit Group 10, Addendum C of this Permit.	HDH-VSL-00001= 3314 HDH-VSL-00002 =630 HDH-VSL-00003 = 5315 HDH-VSL-00004 = 630