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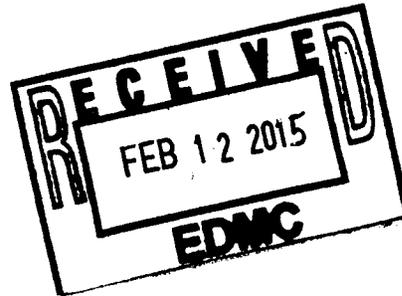
OFFICE OF RIVER PROTECTION

P.O. Box 450, MSIN H6-60
Richland, Washington 99352

FEB 09 2015

15-ECD-0004

Ms. Jane A. Hedges, Program Manager
Nuclear Waste Program
Washington State
Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99354



Ms. Hedges:

SUBMITTAL OF HANFORD FACILITY RESOURCE CONSERVATION AND RECOVERY ACT PERMIT MODIFICATION NOTIFICATION FORM 24590-WTP-PCN-ENV-12-005, UPDATES FOR ANALYTICAL LABORATORY, HIGH-LEVEL WASTE FACILITY, AND LOW-ACTIVITY WASTE FACILITY SUMP DATA

Reference: WA7890008967, "Dangerous Waste Portion of the Hanford Facility Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste, Part III, Operating Unit 10, 'Waste Treatment and Immobilization Plant.'"

This letter transmits Hanford Facility Resource Conservation and Recovery Act Permit Modification Notification Form 24590-WTP-PCN-ENV-12-005 (Attachment) describing a Class 1 modification for the Washington State Department of Ecology's review and approval.

Modification Notification Form 24590-WTP-PCN-ENV-12-005 submits updates to Chapter 4 and Sections 4.1.3.4, 4.1.4.6, and 4.1.5.5 to include detailed descriptions of the permitted sumps located in the analytical laboratory, the High-Level Waste Facility, and the Low-Activity Waste Facility, respectively. This modification also requests that the following three engineering documents be removed from Appendices 9.5, 10.5, and 11.5, respectively, of the Dangerous Waste Permit:

- 24590-LAW-PER-M-02-001, Rev. 5, Low-Activity Waste Facility Sump Data
- 24590-HLW-PER-M-02-001, Rev. 3, High-Level Waste Facility Sump Data
- 24590-LAB-PER-M-02-002, Rev. 2, Sump Data for the Analytical Laboratory Facility.

The Washington State Department of Ecology's comments resulting from review of this modification notification form and the associated information have been dispositioned.

Ms. Jane A. Hedges
15-ECD-0004

-2-

FEB 09 2015

If you have any questions, please contact me, or your staff may contact Gae M. Neath,
Environmental Compliance Division, (509) 376-7828.



Robert G. Hastings, Assistant Manager
Technical and Regulatory Support

ECD:GMN

Attachment

cc w/attach:

B.L. Curn, BNI
B.G. Erlandson, BNI
C.M. Gallaway, BNI
M. McCullough, BNI
S.K. Murdock, BNI
Administrative Record (WTP H-0-8)
BNI Correspondence
Environmental Portal, LMSI

cc electronic:

J. Cantu, Ecology (2 hard copies)
A.S. Carlson, Ecology (5 hard copies, Public Review)
M.E. Jones, Ecology
A.C. Tortoso, Ecology
J.K. Perry, MSA
A.C. McKarns, RL
D.J. Sommer, SCS

cc w/o attach:

J. Cox, CTUIR
S.G. Harris, CTUIR
S.L. Dahl, Ecology
D. McDonald, Ecology
G.P. Bohnee, NPT
K. Niles, Oregon Energy
E.D. MacAlister, RL
R. Jim, YN

Attachment
15-ECD-0004
(51 Pages)

Hanford Facility RCRA Permit Modification Notification
Form 24590-WTP-PCN-ENV-12-005

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 descriptions in Operating Unit Group 10 Chapter 4 (Sections 4.1.3.4, 4.1.4.6, and 4.1.5.5)
and remove sump data documents for the LAW, HLW, and LAB facilities in Operating Unit Group
10 Appendices 9.5, 10.5, and 11.5.

Submitted by Co-Operator:

Roger J. Landon 12/16/14
Roger J. Landon Date

Reviewed by ORP Program Office:

K. WADR 1/21/15
ACTING FOR *D. L. Noyes*
D. L. Noyes Date

Hanford Facility RCRA Permit Modification Notification Form

Unit: Waste Treatment and Immobilization Plant	Permit Part: Part III, Operating Unit 10
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Description of Modification:

The purpose of this Class 11 modification is to update narrative descriptions in Operating Unit Group 10 Chapter 4 (Sections 4.1.3.4, 4.1.4.6, and 4.1.5.5) and remove permit documents referred to generally as sump data documents for the LAW, HLW, and LAB facilities from WA7890008967 Operating Unit Group 10, Appendices 9.5, 10.5, and 11.5, as indicated in the table below.

In addition, this permit modification requests replacement of current "RESERVED" LAW Permit Table III.10.I.B and HLW Permit Tables III.10.J.B and III.10.K.B with the completed Tables III.10.I.B., III.10.J.B., and III.10.K.B., as indicated below:

Appendix 9.5			
Replace:	24590-LAW-PER-M-02-001, Rev. 5, <i>LAW Facility Sump Data</i>	with	Updated text in Operating Unit Group 10 Chapter 4 Section 4.1.3.4, starting on page 10-4-51
Appendix 10.5			
Replace:	24590-HLW-PER-M-02-001, Rev. 3, <i>HLW Facility Sump Data</i>	with	Updated text in Operating Unit Group 10 Chapter 4 Section 4.1.4.6, starting on page 10-4-73
Appendix 11.5			
Replace:	24590-LAB-PER-M-02-002, Rev. 2, <i>Sump Data for LAB Facility</i>	with	Updated text in Operating Unit Group 10 Chapter 4 Section 4.1.5.5, starting on page 10-4-96
Operating Unit Group 10 Permit Conditions			
Replace:	Current Permit Table III.10.I.B - LAW Vitrification Systems Secondary Containment Systems Including Sumps and Floor Drains	with	Completed Table III.10.I.B - LAW Vitrification Miscellaneous Unit System Secondary Containment Sumps and Floor Drains
	Current Permit Table III.10.J.B - HLW Vitrification Systems Secondary Containment Systems Including Sumps and Floor Drains		Completed Table III.10.J.B - HLW Vitrification Miscellaneous Unit System Secondary Containment Sumps and Floor Drains
	Current Permit Table III.10.K.B - HLW Vitrification Systems Secondary Containment Systems Including Sumps and Floor Drains		Completed Table III.10.K.B - HLW Vitrification Miscellaneous Unit System Secondary Containment Sumps and Floor Drains

Design information addressed in the above listed sump data documents and Permit Tables III.10.I.B., III.10.J.B, and III.10.K.B is currently contained in the Operating Unit Group 10, Chapter 4 Table C-9, Permit Tables III.10.E.L, III.10.E.N, III.10.E.P and Piping and Instrumentation Diagrams (P&IDs) for the RLD system. Ecology is requested to approve the attached permit changes and incorporate the changes in the next revision of the WTP Dangerous Waste Permit. This modification is submitted to:

- Remove the sump data documents and replace with narrative descriptions in Operating Unit Group 10 Chapter 4 (Sections 4.1.3.4, 4.1.4.6, and 4.1.5.5).
- Replace the current LAW Permit Table III.10.I.B (containing "RESERVED" under design information) with the completed Table III.10.I.B.
- Replace the current HLW Permit Table III.10.J.B and Table III.10.K.B (containing "RESERVED" under design information) with the completed Table III.10.J.B and Table III.10.K.B.

- Correct sump sizes in Permit Table III.10.E.N and Operating Unit Group 10 Chapter 4 Table C-9 for consistency with the P&IDs.
- Add type of stainless steel to sump material of construction column in Permit Table III.10.E.N., III.10.E.P., and Operating Unit Group 10 Chapter 4 Table C-9.
- Update P&IDs/Revisions in Permit Table III.10.E.N., III.10.E.P., and Operating Unit Group 10 Chapter 4 Table C-9.

In accordance with Permit Condition III.10.C.2.e, this permit modification 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: NA
 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 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: <input type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) <u>Reason for denial:</u> 	Reviewed by Ecology:
	S. Dahl _____ Date _____

LAW C3/C5 Drains/Sump Collection Vessel (RLD-VSL-00004)

DWP Operating Unit Group 10, Appendix 9.1 contains a process flow diagram of the LAW C3/C5 Drains/Sump Collection Vessel (RLD-VSL-00004). This vessel is designed to contain the maximum amount of fire protection water and the volume equivalent to the largest C3/C5 floor area wash. The C3/C5 Drains/Sump Collection Vessel (RLD-VSL-00004) routinely collects liquid drained from the Melter Wet Electrostatic Precipitators (LOP-WESP-00001/2). The overflow from the Melter Concentrate Receipt Vessels (LCP-VSL-00001/2) is also routed to the C3/C5 Drains/Sump Collection Vessel.

Routine process-related effluent from Wet Electrostatic Precipitator drains will be routed from this vessel to the SBS Condensate Collection Vessel. Effluent generated from other sources will drain to the Plant Wash Vessel (RLD-VSL-00003) until it reaches a predetermined level to maintain adequate capacity for fire protection water.

The C3/C5 Drains/Sump Collection Vessel (RLD-VSL-00004) is fitted with level instrumentation. The C3/C5 Drains/Sump Collection Vessel is vented into a common vessel ventilation header. Condensate that forms in the header drains into the C3/C5 Drains/Sump Collection Vessel. Sampling capability is provided using a sampling leg off the pump recirculation line to an autosampler unit.

The C3/C5 Drains/Sump Collection Vessel is located in an enclosed C3/C5 cell area. The C3/C5 Drains/Sump Collection Vessel overflows to a sump in the same cell. During normal operation, the effluent characterized in the C3/C5 Drains/Sump Collection Vessel is expected to be transferred to the TLP system via the SBS Condensate Collection Vessel (RLD-VSL-00005).

SBS Condensate Collection Vessel (RLD-VSL-00005)

DWP Operating Unit Group 10, Appendix 9.1 contains a process flow diagram of the SBS Condensate Collection Vessel (RLD-VSL-00005). This vessel is designed to store SBS column purge effluent. The SBS Condensate Collection Vessel (RLD-VSL-00005) routinely receives effluent from the Submerged Bed Scrubber (LOP-SCB-00001/2) and the C3/C5 Drains/Sump Collection Vessel (RLD-VSL-00004).

The SBS Condensate Collection Vessel is fitted with level instrumentation and is vented into a common vessel ventilation header that drains into the C3/C5 Drains/Sump Collection Vessel (RLD-VSL-00004). Sampling capability is provided using a sampling leg off the pump recirculation line to an autosampler unit. The SBS Condensate Collection Vessel overflows to the Plant Wash Vessel (RLD-VSL-00003). During normal operation, the effluent characterized in the SBS Condensate Collection Vessel is expected to be transferred to the TLP system.

LAW secondary containment sumps.

The LAW sumps described below are part of the secondary containment and leak detection for the LAW permitted tank and MU systems. Location and design information for each LAW permitted sump (RLD-SUMP-00028 through -00032, -00035, and -00036) is provided in Table C-9, WTP Sumps, Leak Detection Boxes, and Floor Drains/Lines.

1 Leak detection capabilities are described in *Leak Detection Capability in the Low-Activity Waste*
2 *Facility* 24590-LAW-PER-M-05-002, located in Appendix 9.18. The LAW waste removal
3 capabilities are described in *Waste Removal Capability for LAW Vitrification Facility* 24590-
4 LAW-PER-M-05-001, located in Appendix 9.18.

5
6 The LAW sumps are located in sloped areas where floors and partial walls lined with stainless
7 steel liner are an integral part of the secondary containment for permitted tank and MU systems.
8 The design and functions of the LAW sumps are summarized below.
9

- 10 • RLD-SUMP-00028. This dry sump, located in C3/C5 Drains/Sump Collection Vessel Cell
11 (L-B001B), is part of the secondary containment system for C3/C5 Drains/Sump Collection
12 Vessel RLD-VSL-00004. This sump is equipped with liquid level detection and alarm. In
13 addition, RLD-SUMP-00028 is designed to collect overflow/leaks from RLD-BULGE-00001
14 drain. This sump is equipped with one pump (RLD-PMP-00004) to transfer the sump
15 contents to Plant Wash Vessel RLD-VSL-00003. Sump waste from RLD-VSL-00003 is
16 transferred to PTF for processing.
17
- 18 • RLD-SUMP-00029/-00030. The Melter 1 Process Cell (L-0123) includes two sumps, RLD-
19 SUMP-00029/-00030, as part of the secondary containment system for tanks and MUs
20 located in this cell. The Melter 1 Process Cell (L-0123) houses the following tanks and MUs:
 - 21 ○ Concentrate Receipt Vessel LCP-VSL-00001
 - 22 ○ Melter 1 Feed Preparation Vessel LFP-VSL-00001
 - 23 ○ Melter 1 Feed Vessel LFP-VSL-00002
 - 24 ○ Melter 1 SBS LOP-SCB-00001
 - 25 ○ Melter 1 WESP LOP-WESP-00001
 - 26 ○ Melter 1 SBS Condensate Vessel LOP-VSL-00001
 - 27

28 The LAW sumps located in the Melter 1 Process Cell (L-0123) are dry sumps, designed to
29 also provide leak detection from the following sources:

- 30 ○ RLD-SUMP-00029 from LCP-BULGE-00001/2 and LOP-BULGE-00001 drain
- 31 ○ RLD-SUMP-00030 from LFP-BULGE-00001 drain
- 32

33 The floor of the cell is sloped to drain potential spillage to a sump at the base of the east or
34 west wall.

35
36 Each sump is equipped with one permanently installed submersible pump (RLD-PMP-
37 00025/-00026). The sumps have liquid level detection and alarms. The contents of RLD-
38 SUMP-00029/-00030 are transferred to Plant Wash Vessel RLD-VSL-00004 at the same
39 elevation within 24 hrs.
40

- 41 • RLD-SUMP-00031/-00032. The Melter 2 Process Cell (L-0124) includes two dry sumps,
42 RLD-SUMP-00031/-00032, as part of the secondary containment system for tanks and
43 MUs located in this cell. The sumps have permanently installed submersible sump pumps
44

1 and have liquid level detection with alarms. The Melter 2 Process Cell (L-0124) houses the
2 following tanks and MUs:

- 3 ○ Concentrate Receipt Vessel LCP-VSL-00002
- 4 ○ Melter 2 Feed Preparation Vessel LFP-VSL-00003
- 5 ○ Melter 2 Feed Vessel LFP-VSL-00004
- 6 ○ Melter 2 SBS LOP-SCB-00002
- 7 ○ Melter 2 WESP LOP-WESP-00002
- 8 ○ Melter 2 SBS Condensate Vessel LOP-VSL-00002

9
10 The LAW sumps located in the Melter 2 Process Cell (L-0124) are designed to also provide
11 leak detection from the following sources:

- 12 ○ RLD-SUMP-00031 from LCP-BULGE-00003 and LOP-BULGE-00002 drain
- 13 ○ RLD-SUMP-00032 from LFP-BULGE-00002 drain

14 The floor of the cell is sloped to drain potential spillage to a sump at the base of the east or
15 west wall.

16 Each sump is equipped with one pump (RLD-PMP-00027/-00028). The contents of RLD-
17 SUMP-00031/-00032 are transferred to Plant Wash Vessel RLD-VSL-00004 at the same
18 elevation within 24 hrs.

- 19 • RLD-SUMP-00035/-00036. Two sumps RLD-SUMP-00035/-00036, located in Effluent Cell
20 (L-0126), are part of the secondary containment system for Plant Wash Vessel RLD-VSL-
21 00003 and SBS Condensate Collection Vessel RLD-VSL-00005. Each sump RLD-SUMP-
22 00035/-00036 is equipped with one permanently installed submersible sump pump (RLD-
23 PMP-00031/-00032) with liquid level detection and alarms. The sump RLD-SUMP-00036 is
24 designed to also detect leaks from RLD-BULGE-00004. The contents of RLD-SUMP-
25 00035/-00036 are normally transferred to C3/C5 Drain/Sump Collection Vessel RLD-VSL-
26 00004 within 24 hrs. In off-normal events, the valves located in C3/C5/Drains/Sump
27 Collection Pump Bulge RLD-BULGE-00001 allow transfers from C3/C5 Drain/Sump
28 Collection Vessel RLD-VSL-00004 to Plant Wash Vessel RLD-VSL-00003 or SBS
29 Condensate Collection Vessel RLD-VSL-00005, using transfer pumps RLD-PMP-
30 00002A/B.

31 32 **4.1.3.5 Radioactive Solid Waste Handling (RWH) System**

33 The primary functions of this system will be to provide equipment for the change out of LAW
34 process vessels and other miscellaneous mixed wastes. This system provides the equipment to
35 move waste out of the building.

36 The vessels are designed for 40 years of service. However, in the event of a failure, the process
37 vessel will be prepared for export by rinsing, disconnection of the process lines, and
38 decontamination. The vessel will be lifted out of the process cell and covered to prevent a spread
39 of contamination. The vessel will be placed in an approved package staged for vessel receipt.
40 Once closed and secured, the package, containing the vessel, will be delivered to an appropriate

1 performed prior to each transfer. The contents are transferred to the PWD system in the
2 pretreatment facility for treatment, as required.

3 **Plant Wash and Drains Vessel (RLD-VSL-00008)**

4 This vessel collects liquids from vessels, sumps, and plant washes within the HLW facility,
5 including wash water from cell floors, equipment exterior surfaces, and stainless steel liners.
6 This vessel also collects the C3 area fire water. Sampling will be performed by an automated
7 sample system to characterize the liquid waste. The contents are transferred to the PWD system
8 in the pretreatment facility for treatment, as required.

9 **Offgas Drains Collection Vessel (RLD-VSL-00002)**

10 This vessel receives condensate from the HOP pipes and PJV drains downstream from the High-
11 Efficiency Mist Eliminator (HOP-HEME-00001A/1B/2A/2B) during off-normal operation. The
12 contents are transferred to the Plant Wash and Drains Vessel (RLD-VSL-00008) in the HLW
13 facility for processing.

14
15 **HLW Secondary containment sumps and drains.**

16
17 The HLW sumps and drains described below are part of the secondary containment and leak
18 detection for the HLW tank and MU systems. The sumps are equipped with radar-type or
19 bubbler level detectors and have either ejectors or pumps. The sumps are equipped with 100%
20 capacity ejectors which have the ability to remove spills, leaks, or accumulated liquid from the
21 secondary containment system within 24 hours. The sumps are dry sumps lined with
22 molybdenum (6 moly) stainless steel liner material. Detailed information on location and design
23 for each HLW permitted secondary containment sump and drain is provided in Table C-9, WTP
24 Sumps, Leak Detection Boxes, and Floor Drains/Lines. All HLW sumps are shown on the HLW
25 RLD system P&IDs.

26
27 Leak detection capabilities are described in *Leak Detection Capability in the HLW Facility*
28 24590-HLW-PER-M-04-002, located in Appendix 10.18. The HLW waste removal capabilities
29 are described in *HLW Facility Waste Removal Capability* 24590-HLW-PER-M-04-0001, located
30 in Appendix 10.18.

31
32 The design and functions of the HLW sumps are summarized below:

- 33
34 • HCP-SUMP-00001. This sump, located in the south section of the Wet Process Cell (H-
35 B014), is part of the secondary containment system for Acidic Waste Vessel
36 RLD-VSL-00007 and Plant Wash and Drains Vessel RLD-VSL-00008. The sump is
37 equipped with two ejectors (RLD-EJCTR-00049A/B). The sump contents are normally
38 ejected to the Plant Wash and Drains Vessel RLD-VSL-00008 via a pipe manifold. The
39 second transfer path is to RLD-VSL-00007.
40
41 • RLD-SUMP-00001. This sump, located in the north section of the Wet Process Cell (H-
42 B014), is part of the secondary containment system for Offgas Drains Collection Vessel
43
44

1 RLD-VSL-00002. This sump is equipped with two ejectors (RLD-EJCTR-00052A/B). The
2 sump contents are ejected to the Plant Wash and Drains Vessel RLD-VSL-00008.

3 • HPH-SUMP-00003. This sump, located in Pour Tunnel 1 (H-B032), is part of the secondary
4 containment system for ancillary equipment piping only; there are no tanks or MUs located
5 in this room. The sump is equipped with one ejector (RLD-EJCTR-00014). The sump
6 contents are ejected to the Plant Wash and Drains Vessel RLD-VSL-00008.

7 • HDH-SUMP-00001. This sump, located in the Canister Rinse Tunnel (H-B039B), is part of
8 the secondary containment system for Canister Rinse Vessel HDH-VSL-00001. The sump is
9 equipped with one ejector (RLD-EJCTR-00055) to transfer the sump contents to the Plant
10 Wash and Drains Vessel (RLD-VSL-00008).

11 • HDH-SUMP-00002. This sump is located in the Canister Rinse-Bogie Maintenance Room
12 (H-B039A). There are no tanks or MUs permanently located in this room, however, the
13 emptied Canister Rinse Bogie Vessel HDH-VSL-00001 is periodically moved into this room
14 for bogie maintenance. This sump is equipped with one pump (RLD-PMP-00023) to transfer
15 the sump contents to the Plant Wash and Drains vessel RLD-VSL-00008.

16 • HDH-SUMP-00003. This sump, located in the Canister Decon Cave (H-B035), is part of the
17 secondary containment system for three tanks:

- 18 ○ Canister Decon Vessel 1 HDH-VSL-00002
- 19 ○ Waste Neutralization Vessel HDH-VSL-00003
- 20 ○ Canister Decon Vessel 2 HDH-VSL-00004

21
22 The sump is equipped with one ejector (RLD-EJCTR-00054) to transfer the sump contents to
23 the Plant Wash and Drains vessel RLD-VSL-00008.

24
25 • HOP-SUMP-00003. This sump, located in SBS Drain Collection Cell 1 (H-B021), is part of
26 the secondary containment system for SBS Condensate Collection Vessel HOP-VSL-00903.
27 This sump is equipped with two ejectors (RLD-EJCTR-00053A/B). This sump is also
28 designed to detect leaks through the gravity floor drain from the secondary containment
29 bermed area located in the west section of Melter Cave 1 (H-0117). The west section of
30 Melter Cave 1 is designed with a secondary containment berm for Melter 1 SBS
31 HOP-SCB-00001 and HEMEs HOP-HEME-00001A/B. The bermed area includes a low
32 point floor drain line (RLD-ZF-03330-S11B-03) to HOP-SUMP-00003 located directly
33 below the bermed area. The contents of HOP-SUMP-00003 are transferred to Plant Wash
34 and Drains Vessel RLD-VSL-00008.

35
36 • HOP-SUMP-00008. This sump, located in SBS Drain Collection Cell 2 (H-B005), is part of
37 the secondary containment system for SBS Condensate Collection Vessel HOP-VSL-00904.
38 This sump is equipped with two ejectors (RLD-EJCTR-00176A/B). This sump is also
39 designed to detect leaks through the gravity floor drain from the secondary containment
40 bermed area located in the west section of Melter Cave 2 (H-0106). The west section of

41
42
43

1 Melter Cave 2 is designed with a secondary containment berm for Melter 2 SBS
2 HOP-SCB-00002 and HEMEs HOP-HEME-00002A/B. The bermed area includes a low
3 point floor drain line (RLD-ZF-03447-S11B-03) to HOP-SUMP-00008 located directly
4 below the bermed area. The contents of HOP-SUMP-00008 are transferred to Plant Wash
5 and Drains Vessel RLD-VSL-00008.

- 6
- 7 • HSH-SUMP-00003. This sump, located in the central section of Melter Cave 1 (H-0117), is
8 part of the secondary containment system for ancillary equipment piping associated with the
9 HLW Melter 1 HMP-MLTR-00001. This sump is equipped with one ejector (RLD-EJCTR-
10 000171). The contents of HSH-SUMP-00003 are transferred to the Plant Wash and Drains
11 Vessel RLD-VSL-00008. This sump is also equipped with a removable sump basket.
12
 - 13 • HSH-SUMP-00007. This sump, located in the central section of Melter Cave 2 (H-0106), is
14 part of the secondary containment system for ancillary equipment associated with the HLW
15 Melter 2 HMP-MLTR-00002. This sump is equipped with one ejector (RLD-EJCTR-
16 00179). The contents of HSH-SUMP-00007 are transferred to the Plant Wash and Drains
17 Vessel RLD-VSL-00008. This sump is also equipped with a removable sump basket.
18
 - 19 • HFP-SUMP-00002. This sump, located in the bermed south section of Melter Cave 1
20 (H-0117), is part of the secondary containment system for Melter 1 Feed Preparation Vessel
21 HFP-VSL-00001 and Melter 1 Feed Vessel HFP-VSL-00002. This sump is equipped with
22 one ejector (RLD-EJCTR-000172). The contents of HFP-SUMP-00002 are transferred to
23 Plant Wash and Drains Vessel RLD-VSL-00008.
24
 - 25 • HFP-SUMP-00005. This sump, located in the bermed south section of Melter Cave 2 (H-
26 0106), is part of the secondary containment system for Melter 2 Feed Preparation Vessel
27 HFP-VSL-00005 and Melter 2 Feed Vessel HFP-VSL-00006. This sump is equipped with
28 one ejector (RLD-EJCTR-000178). The contents of HFP-SUMP-00005 are transferred to
29 Plant Wash and Drains Vessel RLD-VSL-00008.
30
 - 31 • HSH-SUMP-00008. This sump, located in the Melter 1 Cave Decon Pit (H-0310A), is part
32 of the secondary containment system for Decontamination Tank 1 HSH-TK-00001. This
33 sump is equipped with one ejector (RLD-EJCTR-00026) to transfer the sump contents to
34 Plant Wash and Drains Vessel RLD-VSL-00008. This sump is also equipped with a
35 removable sump basket.
36
 - 37 • HSH-SUMP-00009. This sump, located in the Melter 2 Cave Decon Pit (H-0304A), is part
38 of the secondary containment system for Decontamination Tank 2 HSH-TK-00002. This
39 sump is equipped with one ejector (RLD-EJCTR-00173) to transfer the sump contents to
40 Plant Wash and Drains Vessel RLD-VSL-00008. This sump is also equipped with a
41 removable sump basket.
42
 - 43 • HPH-SUMP-00001 and HPH-SUMP-00005. These sumps, located in the Canister Handling
44 Cave (H-0136), are part of the secondary containment system for ancillary equipment piping
45

1 only: there are no tanks or MUs located in this room. Each of these sumps is equipped with
2 one ejector (RLD-EJECTR-000517-00029) to transfer the sump contents to Plant Wash and
3 Drains Vessel RLD-VSL-00008.
4

- 5 • RLD-FD-00186. The Active Services Cell 1 (H-0308) includes one gravity flow floor drain
6 (RLD-FD-00186) that is part of the secondary containment for WESP HOP-WESP-00001.
7 The RLD-FD-00186 drains to HCP-SUMP-00001.
8
- 9 • RLD-FD-00187. The Active Services Cell 2 (H-0302) includes one gravity flow floor drain
10 (RLD-FD-00187) that is part of the secondary containment for WESPs HOP-WESP-00002.
11 The RLD-FD-00187 drains to HCP-SUMP-00001.
12

13 **4.1.4.7 IHLW Glass Canister Handling Process**

14 The IHLW glass canister handling will consist of the following systems:

- 15 • HLW canister receipt handling (HRH) system
- 16 • HLW canister pour handling (HPH) system
- 17 • HLW canister decontamination handling (HDH) system
- 18 • HLW canister export handling (HEH) system

19 The individual systems and their primary functions are described below:

20 **HLW Canister Receipt Handling (HRH) System**

21 The HRH system consists of the equipment, controls, and interlocks required for importing a
22 clean canister into the facility. This system consists of the canister import truck bay, the canister
23 import room, and the canister import tunnel. These areas are located on the south side of the
24 facility.

25 The sequence of operations and the equipment used for canister import are as follows:

- 26 • The shipping crates are unloaded from the transport truck with the canister import crane
27 and placed in the staging area.
- 28 • The canisters are then individually removed from the shipping crate and set on the
29 canister inspection/rotation table.
- 30 • The canister import room roller shutter door is opened and the canister inspection/rotation
31 table rotates the canister to vertical. The canister import monorail hoist and grapple lift
32 and transfer the canister to the canister import room. The canister is either set in the
33 canister import buffer rack or placed in the canister import bogie. When the canister is
34 transferred to the canister import tunnel, the shielded clean canister import hatch is
35 opened and the canister is lowered into the canister import bogie below, and the hatch is
36 closed and sealed.
- 37 • The canister import bogie is transferred under the canister handling cave to the shielded
38 canister handling cave import hatch location. The canister handling cave hatch is then
39 opened and the canister handling cave crane and grapple raises the canister into the
40

1 not a permitted activity, manufacturer cut sheets for support equipment in these rooms is not
2 included in the package. The fifth room is Room A-139D, the airlock/clean drum export area.
3 This area is used to provide additional storage, segregation, and management of waste containers
4 prior to transfer to WTP, Hanford Site, or off-site waste disposal facilities.

5 **4.1.5.5 Radioactive Dangerous Liquid Waste Disposal (RLD) System**

6 The analytical laboratory RLD system is primarily composed of the following:

- 7 • Floor Drain Collection Vessel (RLD-VSL-00163)
- 8 • Laboratory Area Sink Collection Vessel (RLD-VSL-00164)
- 9 • Hotcell Drain Collection Vessel (RLD-VSL-00165)
- 10 • Associated ancillary equipment

11 The Floor Drain Collection Vessel (RLD-VSL-00163) collects, contains, and transfers
12 noncontaminated liquid effluent. The floor drain collection vessel is identified as part of the
13 RLD system. It is not designed or permitted to manage mixed or dangerous wastes. If a spill or
14 release were to occur that contaminated this vessel, the vessel will be discharged to the
15 Laboratory Area Sink Collection Vessel (RLD-VSL-00164) or the Hotcell Drain Collection
16 Vessel (RLD-VSL-00165) and rinsed with water prior to being returned to service. This vessel
17 collects effluent from radiological laboratory floor drains, eyewash, and safety shower
18 equipment. The vessel also collects effluent from the C2 area floor drains located in areas such
19 as the laboratory area corridors, hotcell bay area, and the filter room.

20 Liquid waste management in the hotcell will require remote handling prior to disposal to the
21 Hotcell Drain Collection Vessel (RLD-VSL-00165) from low point drains. Aqueous liquid
22 waste consists of samples (unused and residues), dilutions, and dissolution aliquots prepared for
23 analysis. Liquids will be partially neutralized to reduce corrosivity before they are discharged to
24 the liquid waste system. Containers of aqueous liquids for disposal are moved to and poured
25 down low-point drain using the MSMs along with a minimum of 0.5 gallons flush water for each
26 20 mL of waste. Liquid waste information (including quantity of liquid waste per disposal and
27 identification of the sample that generated the waste) is updated in LIMS using the computer
28 workstation.

29 **LAB Secondary containment sumps, leak detection boxes, and drains.**

30 The LAB sumps, drains, and leak detection boxes described below are part of the secondary
31 containment and leak detection for the RLD tank system. The sump, drain, and leak detection
32 box location and design information is provided in Table C-9, WTP Sumps, Leak Detection
33 Boxes, and Floor Drains/Lines.

34 To minimize the potential for radioactive contamination, in-cell sumps collect periodic
35 washdowns of cells. Built-in spray rings are installed to facilitate waste removal and
36 decontamination.
37
38

1 Leak detection capabilities are described in *Lab Minimum Leak Rate Detection Capabilities for*
2 *Leak Detection Boxes, Cell Sumps, and Pit Sumps* 24590-LAB-PER-M-04-0001, located in
3 Appendix 11.18. The LAB waste removal capabilities are described in *LAB Waste Removal*
4 *Capability for the Effluent Vessel Cells* 24590-LAB-PER-M-04-0002, located in Appendix
5 11.18.

6
7 **Pump and piping pits.** The LAB pump and piping pits are structural compartments that house
8 maintainable equipment in segregated locations where the equipment is readily accessible for
9 maintenance and remote manual operation. The area can be readily decontaminated to support
10 maintenance activities, and the equipment is shielded from high radiation fields emanating from
11 the vessels. The pump and piping pits are provided with secondary containment stainless steel
12 liners. The floors of the pits are sloped to direct potential leakage to their respective sumps.
13 Each pump and piping pit includes a sump that is equipped with a removable weir and a radar
14 level sensor for leak detection. The pump and piping pits are provided with wash rings to
15 support maintenance activities or facilitate decontamination in the event of a spill. Access to the
16 pump and piping pits is achieved via the removal of the pit covers.

LAB pump and piping pits

Cell Name	Room No.	Equipment	Leak Detection/Sump
C3 Pump Pit	A-B002	RLD-PMP-00182A/B	RLD-SUMP-00045
C5 Pump Pit (south)	A-B007	RLD-PMP-00183A	RLD-SUMP-0043A
C5 Piping Pit	A-B006	Valves and Piping for RLD-PMP-00183A/B	RLD-SUMP-00044
C5 Pump Pit (north)	A-B005	RLD-PMP-00183B	RLD-SUMP-00043B

20
21
22 **LAB sumps.** The LAB sumps are located in stainless steel lined secondary containment cells
23 designed with floor sloping in the direction of the sump. They are dry sumps and design and
24 functions of the LAB sumps are summarized below:

- 25 • RLD-SUMP-00041. This sump is located in C3 Effluent Cell (A-B003) and equipped with
26 radar level detection. RLD-SUMP-00041 is equipped with two pumps (RLD-PMP-
27 00182A/B). The contents of RLD-SUMP-00041 are transferred to Hot Cell Drain Collection
28 Vessel RLD-VSL-00165, located in room A-B004, or Lab Sink Drain Collection Vessel
29 RLD-VSL-00164, located in room A-B003.
- 30 • RLD-SUMP-00042. This sump is located in C5 Effluent Cell (A-B004). RLD-SUMP-
31 00042 is similar to the RLD-SUMP-00041 described above. The sump is equipped with radar
32 level detection and is emptied by one of two pumps (RLD-PMP-00183A/B) into PTF vessel
33 PWD-VSL-00044, through a buried, double-pipe (duplex) transfer line, or Hot Cell Drain
34 Collection Vessel RLD-VSL-00165, in room A-B004.

1
2 • RLD-SUMP-00045. This sump is located in C3 Pump and Piping Pit (A-B002). The liner on
3 the floor of the pit consists of several sloped plates that direct potential leakage and
4 washwater (during maintenance) to a drain located at the lowest point in the pit. The sump is
5 formed by a rectangular depression in the stainless steel liner around the drain that includes a
6 removable weir. The volume of the sump is equal to the volume created by the depression in
7 the liner in the vicinity of the drain and the height of the weir. This volume is limited to a
8 maximum value of 2.4 gallons in order to be able to detect a design basis leak of 0.1 gal/h in
9 24 hours. With the weir installed, a detectable level is formed in the sump to allow the radar
10 to sense potential liquids. The liquid spills over the weir and drains to the Lab Sink Drain
11 Collection Vessel RLD-VSL-00164. When the liquid is detected in the sump, the operator
12 manually removes the weir from the sump via an extended drive spindle to allow the sump
13 contents to drain by gravity to the vessel. The weir may be removed during maintenance to
14 preclude the accumulation of washwater residues in the sump.

15 • RLD-SUMP-00043A/B (A-B007/A-B005) and RLD-SUMP-00044 (A-B006). These sumps
16 are located in C5 Pump and Piping Pit and are similar to the RLD-SUMP-00045 described
17 above. The drain line from the two C5 pump sumps and the one C5 piping pit sump is
18 located entirely within the C5 effluent vessel cell (A-B004). Hence, secondary containment
19 and leak detection for this drain line is provided by the C5 effluent vessel and the associated
20 radar leak detection system. These sumps drain to the Hot Cell Drain Collection Vessel
21 RLD-VSL-00165 via a common drain line.

22 **Leak detection boxes.** The LAB leak detection boxes RLD-LDB-00002, -00004, and -00009
23 are located in C5 Effluent Cell A-B004; boxes RLD-LDB-00005 through -00008 and -00011 are
24 located in C3 Effluent Vessel Cell A-B003. The leak detection boxes are connected to the
25 headers that drain to the Hotcell Drain Collection Vessel RLD-VSL-00165 and the Laboratory
26 Area Sink Drain Collection Vessel RLD-VSL-00164. The leak detection boxes are designed to
27 detect a leak in the annular space between the double-walled piping. Each box is installed with a
28 drain plug in the closed position to facilitate collecting a detectable volume of leaked waste.
29 Each box is equipped with a thermal dispersion level switch to detect liquid.

30 31 **4.1.5.6 Laboratory Maintenance**

32
33 The analytical laboratory maintenance shop provides space for performing preventive and 30
34 corrective maintenance on laboratory equipment. There will be two shops, located in different 31
35 potential contamination areas. The C3 shop allows decontamination, maintenance, and storage 32 of
36 contaminated equipment such as hotcell manipulators. The C3 maintenance shop will be 33
37 ventilated to the C3 ventilation system, and effluent from the C3 maintenance shop discharges to 34
38 the Laboratory Area Sink Collection Vessel (RLD-VSL-00164). The C2 shop will provide space 35
39 for the maintenance of equipment that is not expected to be radioactively contaminated such as 36
40 electrical components, utilities systems components, and instruments, and will be ventilated to 37 the
41 C2 ventilation system. A list of proposed maintenance activities that will be performed in the 38
42 analytical laboratory maintenance shops is provided below.
43
44
45

1
2**Table III.10.E.N - HLW Vitrification Plant Tank Systems Secondary Containment Systems,
Including Sumps, Autosamplers, and Floor Drains**

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type	Sump or Drain Line Dimensions ^a (Inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
HCP-SUMP-00001 H-B014 (Wet Process Cell, El. -21')	75	Dry Sump	30" Dia. x 18" Deep Stainless Steel (6% Mo)	24590-HLW -M6-RLD-00015001, Rev 0 -PI-P01T-00001, Rev 9
RLD-SUMP-00001 H-H014 (Wet Process Cell, El. 21')	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel (6% Mo)	24590-HLW -M6-RLD-00015001, Rev 0 -PI-P01T-00001, Rev 9
HOP-SUMP-00003 II-B021 (SBS Drain Collection Cell 1, El. -21')	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel (6% Mo)	24590-HLW -M6-RLD-00015001, Rev 0 -PI-P01T-00001, Rev 9
HOP-SUMP-00008 H-B005 (SBS Drain Collection Cell 2, El. -21_	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel (6% Mo)	24590-HLW -M6-RLD-20004001, Rev 0 -PI-P01T-00001, Rev 9
HDH-SUMP-00001 II-B039B (Canister Rinse	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel	24590-HLW -M6-RLD-00016001, Rev 0

**Table III.10.E.N - HLW Vitrification Plant Tank Systems Secondary Containment Systems,
Including Sumps, Autosamplers, and Floor Drains**

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type	Sump or Drain Line Dimensions* (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
Tunnel, El. -16.5')			(6% Mo)	-PI-P01T-00001, Rev 9
HDH-SUMP-00002 11-B039A (Canister Rinse Bogie Maintenance Room, El. -16')	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-00016001, Rev 0 -PI-P01T-00001, Rev 9
HDH-SUMP-00003 H-B035 (Canister Decon Cave, El. -16')	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-00004002, Rev 0 -PI-P01T-00001, Rev 9
HFP-SUMP-00002 H-0117 (Melter Cave 1, El. 5')	50	Dry Sump	30.20.5" X 24.0.5" X 16" Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-00008002, Rev 0 -PI-P01T-00002, Rev 7
HFP-SUMP-00005 H-0106 (Melter Cave 2 El. 5')	50	Dry Sump	30.20.5" X 24.0.5" X 16" Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD- 20005001, Rev 60 -PI-P01T-00002, Rev 7
HSH-SUMP-00003 H-0117 (Melter Cave 1, El. 3')	50	Dry Sump	30.20.5" X 24.0.5" X 16" Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-00008002, Rev 0 -PI-P01T-00002, Rev 7

**Table III.10.E.N - HLW Vitrification Plant Tank Systems Secondary Containment Systems,
Including Sumps, Autosamplers, and Floor Drains**

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type	Sump or Drain Line Dimensions* (Inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
			Stainless Steel (6% Mo)	
HSH-SUMP-00007 H-0106 (Melter Cave 2, El. 3')	50	Dry Sump	30" X 24" X 16" Stainless Steel (6% Mo)	24590-HLW -M6-RLD-20005001, Rev 0 -P1-P01T-00002, Rev 7
HSH-SUMP-00008 H-310A (Melter 1 Equip. Decon. Pit Area, El. 0')	50	Dry Sump	30" X 24" X 16" Stainless Steel (6% Mo)	24590-HLW -M6-RLD-00003001, Rev 0 -P1-P01T-00002, Rev 7
HSH-SUMP-00009 H-0304A (Melter 2 Equip. Decon. Pit Area, El. 0')	50	Dry Sump	30" X 24" X 16" Stainless Steel (6% Mo)	24590-HLW -M6-RLD-20003001, Rev 0 -P1-P01T-00002, Rev 7
HPH-SUMP-00001 H-0136 (Canister Handling Cave, El. -3')	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel (6% Mo)	24590-HLW -M6-RLD-00016001, Rev 0 -P1-P01T-00002, Rev 7
HPH-SUMP-00005 H-0136 (Canister Handling Cave, El. -3')	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel (6% Mo)	24590-HLW -M6-RLD-00004001, Rev. 0 -P1-P01T-00002, Rev 7

**Table III.10.E.N - HLW Vitrification Plant Tank Systems Secondary Containment Systems,
Including Sumps, Autosamplers, and Floor Drains**

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type	Sump or Drain Line Dimensions* (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
HPH-SUMP-00003 H-B032 (Pour Tunnel 1, El. -21')	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel	24590-HLW -M6-RLD-00016001, Rev 0 -PI-P01T-00001, Rev 9
RLD-ZF-03330-S11B-03 Drain Line from H-0117 (Melter Cave 1) to H-B021 (SBS Drain Collection Cell 1)	N/A	N/A	Line Size Pipe Dia 3" 316L Stainless Steel 316L	24590-HLW -M6-RLD-00015001, Rev 0 -M6-RLD-00017001, Rev 0
RLD-ZF-03447-S11B-03 Drain Line from H-0106 (Melter Cave 2) to H-B005 (SBS Drain Collection Cell 2)	N/A	N/A	Line Size Pipe Dia 3" 316L Stainless Steel 316L	24590-HLW -M6-RLD-20004001, Rev 0 -M6-RLD-20005001, Rev 0
RLD-FD-00186 H-0308 (Melter 1 - Active Services Cell, El. 37')	N/A	N/A	Line Size Pipe Dia 6 3/4" Stainless Steel 316L	24590-HLW -M6-RLD-00015001, Rev 0
RLD-FD-00187 H-0302 (Melter 2 - Active Services Cell, El. 37')	N/A	N/A	Line Size Pipe Dia 6 3/4" Stainless Steel 316L	24590-HLW -M6-RLD-20004001, Rev 0
ASX Sampler 00028 Lower Containment Trough/Dam (H-0305A, El. 37')	N/A	N/A	3" Dia. Stainless Steel 316L	24590-HLW -M6-RLD-00002002, Rev 0

**Table III.10.E.N - HLW Vitrification Plant Tank Systems Secondary Containment Systems,
Including Sumps, Autosamplers, and Floor Drains**

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type	Sump or Drain Line Dimensions* (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
ASX Sampler 00029 Lower Containment Trough/Dam (H-0315, El. 37')	N/A	N/A	3" Dia. Stainless Steel 316L	<u>24590-HLW</u> -M6-RLD-00002002, Rev 0
ASX Sampler 00042 Lower Containment Trough/Dam (H-0318, El. 37')	N/A	N/A	3" Dia. Stainless Steel 316L	<u>24590-HLW</u> -M6-RLD-00002002, Rev 0
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
Footnotes:				
*Dimensions listed are based on permitted design. Actual dimensions may vary within acceptable design tolerances plus or minus (±0.00).				

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2
3

Table III.10.E.O – Laboratory Tank Systems Primary^a Containment Sump Systems

Sump I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions ^b (feet) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

^a Primary sumps are defined in Permit Section [III.10.C.](#) and must comply with dangerous waste tank system requirements for tanks as described in WAC-173-303-640.

^b Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

Table III.10.E.P – Laboratory Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, and Floor Drains

Sump I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Type/Nominal Operating Volume (gallons)	Sump Dimensions ^a (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
RLD-SUMP-00041 A-B003 (C3 Effluent Vessel Cell, Fl. -18'7')	30	Dry	30" Dia. X ~13" Deep Stainless Steel (6% Mg)	24590-LAB -M6-RLD-00002(001), Rev 1 -P1-60-00007, Rev 3

**Table III.10.E.P – Laboratory Tank Systems Secondary Containment Systems,
Including Sumps, Leak Detection Boxes, and Floor Drains**

Sump I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Type/Nominal Operating Volume (gallons)	Sump Dimensions ^a (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
RLD-SUMP-00042 A-B004 (C5 Effluent Vessel Cell, El. -19'2")	30	Dry	30" Dia. X ~13" Deep Stainless Steel (6% Mo)	24590-LAB -M6-RLD- 4994400001001 , Rev 12 -P1-60-00007, Rev 3
RLD-SUMP-00045 A-B002 (C3 Pump Pit Sump, EL -6'-81/2" LP)	1.56	Dry	2'-0" X 2'-6" X 1/2" Stainless Steel (6% Mo)	24590-LAB -M6-RLD- 4994200002003 , Rev 1 -P1-60-00007, Rev 3
RLD-SUMP-00043A A-B007 (C5 Pump Pit Sump, EL -6'-7" LP)	1.40	Dry	1'-6" X 3'-0" X 1/2" Stainless Steel (6% Mo)	24590-LAB -M6-RLD- 4994400001001 , Rev 12 -P1-60-00007, Rev 3
RLD-SUMP-00043B A-B005 (C5 Pump Pit Sump, El. -6'-7" LP)	1.40	Dry	1'-6" X 3'-0" X 1/2" Stainless Steel	24590-LAB -M6-RI.D- 4994400001003 , Rev 12

**Table III.10.E.P – Laboratory Tank Systems Secondary Containment Systems,
Including Sumps, Leak Detection Boxes, and Floor Drains**

Sump I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Type/Nominal Operating Volume (gallons)	Sump Dimensions* (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
			(6% Mo)	-P1-60-00007, Rev 3
RI.D-SUMP-00044 A-B006 (C5 Piping Pit Sump, EL -6'-7" LP)	1.56	Dry	2'-0" X 2'-6" X 1/2" Stainless Steel (6% Mo)	24590-LAB -M6-RLD- P0004000010014 Rev 02 -P1-60-00007, Rev 3
RLD-WU-02207-S11E-04 A-B003. (C3 Effluent Vessel Cell)	N/A	N/A	4" Dia 316L	24590-LAB -M6-RLD- P0004200002001 Rev 1
RI.D-ZN-02203-S11E-04 A-B004. (C5 Effluent Vessel Cell)	N/A	N/A	4" Dia 316L	24590-LAB -M6-RLD- P00040000001 Rev 12
RLD-ZN-03393-S11E-04 A-B004. (C5 Effluent Vessel Cell)	N/A	N/A	4" Dia 316L	24590-LAB -M6-RLD- 0000001P0004 Rev 12
RLD-ZN-03394-S11E-04 A-B004. (C5 Effluent Vessel Cell)	N/A	N/A	4" Dia 316L	24590-LAB -M6-RLD- 0000001P0004 Rev 12
RLD-LDB-00002	6	N/A	8" Dia. x 24" Length/	24590-LAB

**Table III.10.E.P – Laboratory Tank Systems Secondary Containment Systems,
Including Sumps, Leak Detection Boxes, and Floor Drains**

Sump I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Type/Nominal Operating Volume (gallons)	Sump Dimensions* (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
A-B004 (C5 Effluent Vessel Cell, El. -10')			Stainless Steel 316L	-M6-RLD- (00008001)P0004 , Rev 04
RLD-LDB-00004 A-B004 (C5 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel 316L	24590-LAB -M6-RLD- (00008001)P0004 , Rev 04
RLD-LDB-00005 A-B003 (C3 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel 316L	24590-LAB -M6-RLD- (00007001)P0003 , Rev 04
RLD-LDB-00006 A-B003 (C3 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel 316L	24590-LAB -M6-RLD- (00007001)P0003 , Rev 04
RLD-LDB-00007 A-B003 (C3 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel 316L	24590-LAB -M6-RLD- (00007001)P0003 , Rev 04
RLD-LDB-00008 A-B003 (C3 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel 316L	24590-LAB -M6-RLD- (00007001)P0003 , Rev 04

**Table III.10.E.P – Laboratory Tank Systems Secondary Containment Systems,
Including Sumps, Leak Detection Boxes, and Floor Drains**

Sump I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Type/Nominal Operating Volume (gallons)	Sump Dimensions* (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
RLD-LDB-00009 A-B004 (C5 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel 316L	24590-LAB -M6-RLD- (000018001)400008 Rev 04
RLD-LDB-00011 A-B003 (C3 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel 316L	24590-LAB -M6-RLD-00007001, Rev 0
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
Footnotes:				
*Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).				

Table III.10.I.A - LAW Vitrification System Description*

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables and Figures
RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

*Permit Table III.10.I.A will be completed in accordance with Permit Condition III.10.H.5.e.x., prior to initiating Permit Condition III.10.I.1. See Permit Table III.10.H.A for the current LAW Vitrification System Description.

Table III.10.I.B - LAW Vitrification Miscellaneous Unit System Secondary Containment Systems Including Sumps and Floor Drains

Sump/Floor Drain I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions ²⁴ (inches/feet) & Materials of Construction	Engineering Description (Drawing Nos, Specification Nos, etc.)
RESERVED	RESERVED	RESERVED	RESERVED
<u>BLD-SUMP-00029</u> <u>L-0123 (Process Cell, Fl. +5')</u>	<u>37</u>	<u>30" Dia. By 12" deep</u> <u>Stainless Steel</u> <u>(6% Me)</u>	<u>2-1590-1 AW</u> <u>M6-BLD-00003002</u> <u>PI-P011-00002</u>

Table III.10.I.B - LAW Vitrification Miscellaneous Unit System Secondary Containment Systems Including Sumps and Floor Drains

Sump/Floor Drain I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions ²⁴ (inches/feet) & Materials of Construction	Engineering Description (Drawing Nos, Specification Nos, etc.)
<u>RLD-SUMP-00030</u> <u>L-0123 (Process Cell, El. +3')</u>	37	<u>30" Dia. By 12" deep</u> <u>Stainless Steel</u> <u>(6% Mo)</u>	<u>24590-LAW</u> <u>-M6-RLD-00003002</u> <u>-P1-P01T-00002</u>
<u>RLD-SUMP-00031</u> <u>L-0124 (Process Cell Sump, El. +3')</u>	37	<u>30" Dia. By 12" deep</u> <u>Stainless Steel</u> <u>(6% Mo)</u>	<u>24590-LAW</u> <u>-M6-RLD-00003002</u> <u>-P1-P01T-00002</u>
<u>RLD-SUMP-00032</u> <u>L-0124 (Process Cell, El. +3')</u>	37	<u>30" Dia. By 12" deep</u> <u>Stainless Steel</u> <u>(6% Mo)</u>	<u>24590-LAW</u> <u>-M6-RLD-00003002</u> <u>-P1-P01T-00002</u>
<u>LOP-FD-00001</u> <u>L-0123 (LOP-BILGE-00001 drain, El. +3')</u>	N/A	<u>2" Dia.</u> <u>6% Mo</u>	<u>24590-LAW</u> <u>-M6-LOP-00001003</u>
<u>RLD-WS-20037-S11B-01</u> <u>L-0123 (Melter 1 Encasement Assembly Drain, El. +3')</u>	N/A	<u>1" Dia.</u> <u>316L</u>	<u>24590-LAW</u> <u>-M6-LMP-00012001</u>

Table III.10.I.B - LAW Vitrification Miscellaneous Unit System Secondary Containment Systems Including Sumps and Floor Drains

Sump/Floor Drain I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions ^a (inches/feet) & Materials of Construction	Engineering Description (Drawing Nos, Specification Nos, etc.)
<u>LOP-FD-00002</u> <u>L-0124 (LOP-BULGE-00002 Drain, El. +3)</u>	<u>N/A</u>	<u>2" Dia.</u> <u>6% Mo</u>	<u>24590-LAW</u> <u>-M6-LOP-00002003</u>
<u>RLD-WS-20033-S11B-01</u> <u>L-0124 (Melter 2 Encasement Assembly Drain, El. +3')</u>	<u>N/A</u>	<u>1" Dia.</u> <u>316L</u>	<u>24590-LAW</u> <u>-M6-LMP-00042001</u>
<u>RLD-FD-00025</u> <u>L-0304F (Curb floor drain for Caustic Scrubber, El. 48')</u>	<u>N/A</u>	<u>4" Dia.</u> <u>316L</u>	<u>24590-LAW</u> <u>-M6-RLD-00003001</u>
Footnotes:			
*Permit Table III.10.I.B will be completed in accordance with Permit Condition III.10.H.5.b.vii, prior to initiating Permit Condition III.10.I.A. See Permit Table III.10.H.B for the current LAW Vitrification System Secondary Containment Systems including Sumps and Floor Drains.			
^a Dimensions listed are based on permitted design. Actual dimensions may vary within acceptable design tolerances plus or minus (±BD).			

**Table III.10.J.B – HLW Vitrification Miscellaneous Unit Systems Secondary Containment Systems
Including Sumps and Floor Drains**

Sump/Floor Drain I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions ^a (Inches/feet) & Materials of Construction	Maximum Allowable Liquid Height (inches)	Secondary Containment Volume (gallons)	Engineering Description (Drawing Nos., Specification Nos., etc.)
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
HOP-SUMP-00003 H-B021 (SBS Drain Collection Cell 1, El. -21')	75	30" Dia. X 18" Deep Stainless Steel 6% Mo	Dry sump	11,482 (24590-HLW-PER-M-02-003)	24590-HLW-M6-RLD-00015001, Rev 0 P1-P011-00001, Rev 9
HOP-SUMP-00008 H-B005 (SBS Drain Collection Cell 2, El. -21')	75	30" Dia. X 18" Deep Stainless Steel 6% Mo	Dry sump	11,482 (24590-HLW-PER-M-02-003)	24590-HLW-M6-RLD-20004001, Rev 0 P1-P011-00001, Rev 9
RI.D.-ZF-03330-S11B-03 H-B021 (SBS Drain Collection	N/A	Line Size Pipe Dia 3" 316L Stainless Steel 316L	N/A	N/A	24590-HLW-M6-RLD-00015001, Rev 0 M6-RLD

**Table III.10.J.B – HLW Vitrification Miscellaneous Unit Systems Secondary Containment Systems
Including Sumps and Floor Drains**

Sump/Floor Drain I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions* (inches/feet) & Materials of Construction	Maximum Allowable Liquid Height (inches)	Secondary Containment Volume (gallons)	Engineering Description (Drawing Nos., Specification Nos., etc.)
Cell D					00017001, Rev 0
RLD-ZI-03447- S11B-03 H-B005 (SBS Drain Collection Cell 2)	N/A	Line Size Pipe Dia 3" 316L Stainless Steel 316L	N/A	N/A	24590-HLW -M6-RLD- 20004001, Rev 0 -M6-RLD- 20005001, Rev 0
RLD-FD-00186 H-0308 (Melter 1 - Active Services Cell, El. 37.)	N/A	Line Size Pipe Dia 3" Stainless Steel 316L	N/A	N/A	24590-HLW -M6-RLD- 00015001, Rev 0
RLD-FD-00187 H-0302 (Melter 2 - Active Services Cell, El. 37.)	N/A	Line Size Pipe Dia 3" Stainless Steel 316L	N/A	N/A	24590-HLW -M6-RLD- 20004001, Rev 0

Footnotes:

*Dimensions listed are based on permitted design. Actual dimensions may vary within acceptable design tolerances plus or

Table III.10.J.B – HLW Vitrification Miscellaneous Unit Systems Secondary Containment Systems including Sumps and Floor Drains

Sump/Floor Drain I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions* (inches/feet) & Materials of Construction	Maximum Allowable Liquid Height (inches)	Secondary Containment Volume (gallons)	Engineering Description (Drawing Nos., Specification Nos., etc.)
min. (TBD)					

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Table III.10.J.C – HLW Vitrification System Process and Leak Detection System Instruments and Parameters

P&ID	Monitoring or Control Parameter	Type of Instrument or Control Device	Instrument or Control Device Tag No.	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Instrument Calibration Method No. and Range
24590-HLW-M6-HMP-00004001, Rev 0	Melter 1 plenum temperature, 62"	TBD	(TE-0920A + TT-0920A + TI-0920A)* Or (TE-0920C +	TBD	TBD	TBD	TBD	TBD

Table III.10.K.A - HLW Vitrification System Description

Sub-system Description	Sub-System Designation	Engineering Description (Drawing Nos., etc.)	Narrative Description, Tables, and Figures
RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

*Permit Table III.10.K.A will be completed in accordance with Permit Condition III.10.J.5.e.x., prior to initiating Permit Condition III.10.K.1. See Permit Table III.10.J.A for the current HLW Vitrification System Description.

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Table III.10.K.B - HLW Vitrification Miscellaneous Unit System Secondary Containment Systems Including Sumps and Floor Drains

Sump/Floor Drain I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions ²⁴ (inches/feet) & Materials of Construction	Engineering Description (Drawing Nos., Specification Nos., etc.)
RESERVED	RESERVED	RESERVED	RESERVED
HOP-SUMP-00003 H-B021 (SBS Drain Collection Cell) L EL. 21'	75	30" Dia. X 18" Deep Stainless Steel 6% Mo	24590-HLW -M6-R1 D-00015001, Rev 0 -P1-P011-00001, Rev 9
HOP-SUMP-00008	75	30" Dia. X 18" Deep	24590-HLW

Table III.10.K.B - HLW Vitrification Miscellaneous Unit System Secondary Containment Systems Including Sumps and Floor Drains

Sump/Floor Drain I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions ² (inches/feet) & Materials of Construction	Engineering Description (Drawing Nos., Specification Nos., etc.)
11-B005 (SBS Drain Collection Cell 2) El. 21		Stainless Steel 6% Mo	-M6-RLD-20004001, Rev 0 -P1-P01T-00001, Rev 9
RLD-ZF-03330-S11B-03 11-B002 (SBS Drain Collection Cell 1)	N/A	Line Size Pipe Dia 3" 316L Stainless Steel 316L	24590-HLW -M6-RLD-00015001, Rev 0 -M6-RLD-00017001, Rev 0
RLD-ZF-03447-S11B-03 11-B005 (SBS Drain Collection Cell 2)	N/A	Line Size Pipe Dia 3" 316L Stainless Steel 316L	24590-HLW -M6-RLD-20004001, Rev 0 -M6-RLD-20005001, Rev 0
RLD-FD-00186 11-0308 (Melter 1 - Active Services Cell, El. 37)	N/A	Line Size Pipe Dia 3" Stainless Steel 316L	24590-HLW -M6-RLD-00015001, Rev 0
RLD-FD-00187 11-0302 (Melter 2 - Active Services Cell, El. 37)	N/A	Line Size Pipe Dia 3" Stainless Steel 316L	24590-HLW -M6-RLD-20004001, Rev 0

Table III.10.K.B - HLW Vitrification Miscellaneous Unit System Secondary Containment Systems Including Sumps and Floor Drains

Sump/Floor Drain I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions ^{ab} (inches/feet) & Materials of Construction	Engineering Description (Drawing Nos., Specification Nos., etc.)
Footnotes:			
*Permit Table III.10.K.B will be completed in accordance with Permit Condition III.10.J.5.b.vii., prior to initiating Permit Condition III.10.K.1. See Permit Table III.10.J.B for the current HLW Vitrification System Secondary Containment Systems Including Sumps and Floor Drains.			
^a Dimensions listed are based on permitted design. Actual dimensions may vary within acceptable design tolerances plus or minus (±1%).			

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Table III.10.K.C - HLW Vitrification System Process and Leak Detection System Instruments and Parameters

Sub-system Locator and Name (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Failure State	Expected Range	Instrument Accuracy	Instrument Calibration Method No. and Range
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
Footnotes:								
*Permit Table III.10.K.C will be completed in accordance with Permit Condition III.10.J.5.c.ix., prior to initiating Permit Condition III.10.K.1. See Permit Table III.10.J.C for the current HLW Vitrification System Process and Leak Detection System Instruments and Parameters.								

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WA7890008967, Part III, Operating Unit Group 10
Waste Treatment and Immobilization Plant**Table C-9 WTP Sumps, Leak Detection Boxes, and Floor Drains/Lines**

Sump/Leak Detection Box, or Floor Drain/Line I.D.#, Room, and Elevation	Maximum Sump/Leak Detection Box Capacity (gallons)	Sump/Leak Detection Box Level Detection Type	Sump, Leak Detection Box or Floor Drain/Line Dimensions (approximate) and Materials of Construction	Piping and Instrumentation Diagram Number
RLD-WU-22123-S1 IB-03 ASX Sampler 00012 Lower Containment Drain Line (L-0301, El. 48')	N/A	Thermal Dispersion	3" Dia. Stainless Steel 316L	24590-LAW -M6-RI.D-00003001
RI.D-WU-22117-S1 IB-03 ASX Sampler 00013 Lower Containment Drain Line (L-0301, El. 48')	N/A	Thermal Dispersion	3" Dia. Stainless Steel 316L	24590-LAW -M6-RI.D-00003001
HLW Vitrification Facility				
Sumps				
HCP-SUMP-00001 H-B014 (Wet Process Cell, El. -21')	75	Radar	30" Dia. x 18" Deep Stainless Steel (6% Mo)	24590-HLW -M6-RI.D-00015001
RLD-SUMP-00001 H-B014 (Wet Process Cell, El. -21')	75	Radar	30" Dia. x 18" Deep Stainless Steel (6% Mo)	24590-HLW -M6-RI.D-00015001
HOP-SUMP-00003 H-B021 (SBS Drain Collection Cell 1, El. -21')	75	Radar	30" Dia. x 18" Deep Stainless Steel (6% Mo)	24590-HLW -M6-RI.D-00015001

Part III, Operating Unit Group 10-4-244

Table C-9 WTP Sumps, Leak Detection Boxes, and Floor Drains/Lines

Sump/Leak Detection Box, or Floor Drain/Line I.D.#, Room, and Elevation	Maximum Sump/Leak Detection Box Capacity (gallons)	Sump/Leak Detection Box Level Detection Type	Sump, Leak Detection Box or Floor Drain/Line Dimensions (approximate) and Materials of Construction	Piping and Instrumentation Diagram Number
IOP-SUMP-00008 II-B005 (SBS Drain Collection Cell 2, El. -21')	75	Radar	30" Dia. x 18" Deep Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-20004001
HDH-SUMP-00001 H-B039B (Canister Rinse Tunnel, El. -16.5')	75	Radar	30" Dia. x 18" Deep Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-00016001
HDH-SUMP-00002 II-B039A (Canister Rinse Bogie Maintenance Room, El. -16')	75	Radar	30" Dia. x 18" Deep Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-00016001
HDH-SUMP-00003 II-B035 (Canister Decon Cave, El. -16')	75	Radar	30" Dia. x 18" Deep Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-00004002
HFP-SUMP-00002 H-0117 (Melter Cave 1, El. 5')	50	Radar	30" x 24" x 16" Deep Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-00008002
HFP-SUMP-00005 II-0106 (Melter Cave 2 El. 5')	50	Radar	30" x 24" x 16" Deep Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-20005001

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WA7890008967, Part III, Operating Unit Group 10
Waste Treatment and Immobilization Plant**Table C-9 WTP Sumps, Leak Detection Boxes, and Floor Drains/Lines**

Sump/Leak Detection Box, or Floor Drain/Line I.D.#, Room, and Elevation	Maximum Sump/Leak Detection Box Capacity (gallons)	Sump/Leak Detection Box Level Detection Type	Sump, Leak Detection Box or Floor Drain/Line Dimensions (approximate) and Materials of Construction	Piping and Instrumentation Diagram Number
HSH-SUMP-00003 H-0117 (Melter Cave 1, El. 3')	50	Bubbler	3020.5" x 240.5" x 16" Deep Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-00008002
HSH-SUMP-00007 H-0106 (Melter Cave 2, El. 3')	50	Bubbler	3020.5" x 240.5" x 16" Deep Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-20005001
HSH-SUMP-00008 H-310A (Melter 1 Equipment Decon Pit, El. 0')	50	Radar	3020.5" x 240.5" x 16" Deep Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-00003001
HSH-SUMP-00009 H-0304A (Melter 2 Equipment Decon Pit, El. 0')	50	Radar	3020.5" x 240.5" x 16" Deep Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-20003001
HPH-SUMP-00001 H-0136 (Canister Handling Cave, El. -3')	75	Radar	30" Dia. x 18" Deep Stainless Steel (6% Mo)	<u>24590-HLW</u> -M6-RLD-00016001

Part III, Operating Unit Group 10-4-246

Table C-9 WTP Sumps, Leak Detection Boxes, and Floor Drains/Lines

Sump/Leak Detection Box, or Floor Drain/Line I.D.#, Room, and Elevation	Maximum Sump/Leak Detection Box Capacity (gallons)	Sump/Leak Detection Box Level Detection Type	Sump, Leak Detection Box or Floor Drain/Line Dimensions (approximate) and Materials of Construction	Piping and Instrumentation Diagram Number
HPH-SUMP-00005 H-0136 (Canister Handling Cave, El. -3')	75	Radar	30" Dia. x 18" Deep Stainless Steel (6% Mo)	24590-HLW -M6-RLD-00004001
IIPIT-SUMP-00003 H-B032 (Pour Tunnel 1, El. -21')	75	Radar	30" Dia. x 18" Deep Stainless Steel (6% Mo)	24590-HLW -M6-RLD-00016001
Floor Drain Lines				
RLD-ZF-03330-S11B-03 Floor Drain Line H-B021 (SBS Drain Collection Cell 1, El. -21')	N/A	N/A	3" Dia. 316L -Stainless Steel 316L	24590-HLW -M6-RLD-00017001 -M6-RLD-00015001
RLD-ZF-03447-S11B-03 Floor Drain Line H-B005 (SBS Drain Collection Cell 2, El. -21')	N/A	N/A	3" Dia. 316L -Stainless Steel 316L	24590-HLW -M6-RLD-20005001 -M6-RLD-20004001
RLD-FD-00186 Floor Drain/Line RLD-ZF-00033- S11B-03 H-0308 (Melter 1 - Active Services Cell, El. 37')	N/A	N/A	3" Dia. Stainless Steel 316L	24590-HLW -M6-RLD-00015001
RLD-FD-00187 Floor Drain/Line RLD-ZF-003428- S11B-03	N/A	N/A	3" Dia. Stainless Steel	24590-HLW -M6-RLD-20004001

Table C-9 WTP Sumps, Leak Detection Boxes, and Floor Drains/Lines

Sump/Leak Detection Box, or Floor Drain/Line I.D.#, Room, and Elevation	Maximum Sump/Leak Detection Box Capacity (gallons)	Sump/Leak Detection Box Level Detection Type	Sump, Leak Detection Box or Floor Drain/Line Dimensions (approximate) and Materials of Construction	Piping and Instrumentation Diagram Number
H-0302 (Melter 2 - Active Services Cell, El. 37')			316L	
Autosampler Drain Lines				
RLD-ZF-04118-S11B-03 ASX Sampler 00028 Lower Containment Drain Line (H-0305A, El. 37')	N/A	Thermal Dispersion	3" Dia. Stainless Steel 316L	24590-HLW -M6-RLD-00002002
RLD-ZF-04119-S11B-03 ASX Sampler 00029 Lower Containment Drain Line (H-0315, El. 37')	N/A	Thermal Dispersion	3" Dia. Stainless Steel 316L	24590-HLW -M6-RLD-00002002
RLD-ZF-04120-S11B-03 ASX Sampler 00042 Lower Containment Drain Line (H-0318, El. 37')	N/A	Thermal Dispersion	3" Dia. Stainless Steel 316L	24590-HLW -M6-RLD-00002002
Analytical Laboratory				
Sumps				
RLD-SUMP-00041 A-B003 (C3 Effluent Vessel Cell, El. -18'7")	30	Radar	30" Dia. x 13" Deep Stainless Steel (6% Mo)	24590-LAB -M6-RLD-00002001
RLD-SUMP-00042 A-B004 (C5 Effluent Vessel Cell, El. -19'2")	30	Radar	30" Dia. x 13" Deep Stainless Steel	24590-LAB -M6-RLD-00001001

Table C-9 WTP Sumps, Leak Detection Boxes, and Floor Drains/Lines

Sump/Leak Detection Box, or Floor Drain/Line I.D.#, Room, and Elevation	Maximum Sump/Leak Detection Box Capacity (gallons)	Sump/Leak Detection Box Level Detection Type	Sump, Leak Detection Box or Floor Drain/Line Dimensions (approximate) and Materials of Construction	Piping and Instrumentation Diagram Number
			(6% Mo)	
RLD-SUMP-00045 A-B002 (C3 Pump Pit Sump, EL -6'-8 1/2" LP)	1.60	Radar	2'-0" x 2'-6" x 1/2" Stainless Steel (6% Mo)	24590-LAB -M6-RLD-00002003
RLD-SUMP-00043A A-B007 (C5 Pump Pit Sump, EL -6'-7" LP)	1.60	Radar	1'-6" x 3'-0" x 1/2" Stainless Steel (6% Mo)	24590-LAB -M6-RLD-00001002
RLD-SUMP-00043B A-B005 (C5 Pump Pit Sump, EL -6'-7" LP)	1.60	Radar	1'-6" x 3'-0" x 1/2" Stainless Steel (6% Mo)	24590-LAB -M6-RLD-00001003
RLD-SUMP-00044 A-B006 (C5 Piping Pit Sump, EL -6'-7" LP)	1.60	Radar	2'-0" x 2'-6" x 1/2" Stainless Steel (6% Mo)	24590-LAB -M6-RLD-00001004
<u>Leak Detection Boxes</u>				
RLD-LDB-00002 A-B004 (C5 Effluent Vessel Cell, EL -10')	6	Thermal Dispersion	8" Dia. x 24" Length/ Stainless Steel <u>316L</u>	24590-LAB -M6-RLD-00008001
RLD-LDB-00004	6	Thermal	8" Dia. x 24" Length/	24590-LAB

Table C-9 WTP Sumps, Leak Detection Boxes, and Floor Drains/Lines

Sump/Leak Detection Box, or Floor Drain/Line I.D.#, Room, and Elevation	Maximum Sump/Leak Detection Box Capacity (gallons)	Sump/Leak Detection Box Level Detection Type	Sump, Leak Detection Box or Floor Drain/Line Dimensions (approximate) and Materials of Construction	Piping and Instrumentation Diagram Number
A-B004 (C5 Effluent Vessel Cell, El. -10')		Dispersion	Stainless Steel 316L	-M6-RLD-00008001
RLD-LDB-00005 A-B003 (C3 Effluent Vessel Cell, El. -10')	6	Thermal Dispersion	8" Dia. x 24" Length/ Stainless Steel 316L	<u>24590-LAB</u> -M6-RLD-00007001
RLD-LDB-00006 A-B003 (C3 Effluent Vessel Cell, El. -10')	6	Thermal Dispersion	8" Dia. x 24" Length/ Stainless Steel 316L	<u>24590-LAB</u> -M6-RLD-00007001
RLD-LDB-00007 A-B003 (C3 Effluent Vessel Cell, El. -10')	6	Thermal Dispersion	8" Dia. x 24" Length/ Stainless Steel 316L	<u>24590-LAB</u> -M6-RLD-00007001
RLD-LDB-00008 A-B003 (C3 Effluent Vessel Cell, El. -10')	6	Thermal Dispersion	8" Dia. x 24" Length/ Stainless Steel 316L	<u>24590-LAB</u> -M6-RLD-00007001
RLD-LDB-00009 A-B004 (C5 Effluent Vessel Cell, El. -10')	6	Thermal Dispersion	8" Dia. x 24" Length/ Stainless Steel 316L	<u>24590-LAB</u> -M6-RLD-00008001
RLD-LDB-00011	6	Thermal	8" Dia. x 24" Length/ 316L	<u>24590-LAB</u>

Table C-9 WTP Sumps, Leak Detection Boxes, and Floor Drains/Lines

Sump/Leak Detection Box, or Floor Drain/Line I.D.#, Room, and Elevation	Maximum Sump/Leak Detection Box Capacity (gallons)	Sump/Leak Detection Box Level Detection Type	Sump, Leak Detection Box or Floor Drain/Line Dimensions (approximate) and Materials of Construction	Piping and Instrumentation Diagram Number
A-B003 (C3 Effluent Vessel Cell, El. -10')		Dispersion	Stainless Steel 316L	-M6-RLD-00007001
Drain Lines				
RI.D-WU-02207-S11E-04 Drain Line A-B003, (C3 Effluent Vessel Cell, El. -18'7")	N/A	N/A	4" Dia. 316L	24590-LAB -M6-RLD-00002001 -M6-RLD-00002003
RI.D-ZN-02203-S11E-04 Drain Line A-B004, (C5 Effluent Vessel Cell, El. -19'2")	N/A	N/A	4" Dia. 316L	24590-LAB -M6-RLD-00001001 -M6-RLD-00001002
RLD-ZN-03393-S11E-04 Drain Line A-B004, (C5 Effluent Vessel Cell, El. -19'2")	N/A	N/A	4" Dia. 316L	24590-LAB -M6-RLD-00001001 -M6-RLD-00001003
RLD-ZN-03394-S11E-04 Drain Line A-B004, (C5 Effluent Vessel Cell, El. -19'2")	N/A	N/A	4" Dia. 316L	24590-LAB -M6-RLD-00001001 -M6-RLD-00001004

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LAW C3/C5 Drains/Sump Collection Vessel (RLD-VSL-00004)

DWP Operating Unit Group 10, Appendix 9.1 contains a process flow diagram of the LAW C3/C5 Drains/Sump Collection Vessel (RLD-VSL-00004). This vessel is designed to contain the maximum amount of fire protection water and the volume equivalent to the largest C3/C5 floor area wash. The C3/C5 Drains/Sump Collection Vessel (RLD-VSL-00004) routinely collects liquid drained from the Melter Wet Electrostatic Precipitators (LOP-WESP-00001/2). The overflow from the Melter Concentrate Receipt Vessels (LCP-VSL-00001/2) is also routed to the C3/C5 Drains/Sump Collection Vessel.

Routine process-related effluent from Wet Electrostatic Precipitator drains will be routed from this vessel to the SBS Condensate Collection Vessel. Effluent generated from other sources will drain to the Plant Wash Vessel (RLD-VSL-00003) until it reaches a predetermined level to maintain adequate capacity for fire protection water.

The C3/C5 Drains/Sump Collection Vessel (RLD-VSL-00004) is fitted with level instrumentation. The C3/C5 Drains/Sump Collection Vessel is vented into a common vessel ventilation header. Condensate that forms in the header drains into the C3/C5 Drains/Sump Collection Vessel. Sampling capability is provided using a sampling leg off the pump recirculation line to an autosampler unit.

The C3/C5 Drains/Sump Collection Vessel is located in an enclosed C3/C5 cell area. The C3/C5 Drains/Sump Collection Vessel overflows to a sump in the same cell. During normal operation, the effluent characterized in the C3/C5 Drains/Sump Collection Vessel is expected to be transferred to the TLP system via the SBS Condensate Collection Vessel (RLD-VSL-00005).

SBS Condensate Collection Vessel (RLD-VSL-00005)

DWP Operating Unit Group 10, Appendix 9.1 contains a process flow diagram of the SBS Condensate Collection Vessel (RLD-VSL-00005). This vessel is designed to store SBS column purge effluent. The SBS Condensate Collection Vessel (RLD-VSL-00005) routinely receives effluent from the Submerged Bed Scrubber (LOP-SCB-00001/2) and the C3/C5 Drains/Sump Collection Vessel (RLD-VSL-00004).

The SBS Condensate Collection Vessel is fitted with level instrumentation and is vented into a common vessel ventilation header that drains into the C3/C5 Drains/Sump Collection Vessel (RLD-VSL-00004). Sampling capability is provided using a sampling leg off the pump recirculation line to an autosampler unit. The SBS Condensate Collection Vessel overflows to the Plant Wash Vessel (RLD-VSL-00003). During normal operation, the effluent characterized in the SBS Condensate Collection Vessel is expected to be transferred to the TLP system.

LAW secondary containment sumps.

The LAW sumps described below are part of the secondary containment and leak detection for the LAW permitted tank and MU systems. Location and design information for each LAW permitted sump (RLD-SUMP-00028 through -00032, -00035, and -00036) is provided in Table C-9, WTP Sumps, Leak Detection Boxes, and Floor Drains/Lines.

1 Leak detection capabilities are described in *Leak Detection Capability in the Low-Activity Waste*
2 *Facility 24590-LAW-PER-M-05-002*, located in Appendix 9.18. The LAW waste removal
3 capabilities are described in *Waste Removal Capability for LAW Vitrification Facility 24590-*
4 *LAW-PER-M-05-001*, located in Appendix 9.18.

5
6 The LAW sumps are located in sloped areas where floors and partial walls lined with stainless
7 steel liner are an integral part of the secondary containment for permitted tank and MU systems.
8 The design and functions of the LAW sumps are summarized below.
9

- 10 • RLD-SUMP-00028. This dry sump, located in C3/C5 Drains/Sump Collection Vessel Cell
11 (L-B001B), is part of the secondary containment system for C3/C5 Drains/Sump Collection
12 Vessel RLD-VSL-00004. This sump is equipped with liquid level detection and alarm. In
13 addition, RLD-SUMP-00028 is designed to collect overflow/leaks from RLD-BULGE-00001
14 drain. This sump is equipped with one pump (RLD-PMP-00004) to transfer the sump
15 contents to Plant Wash Vessel RLD-VSL-00003. Sump waste from RLD-VSL-00003 is
16 transferred to PTF for processing.
17
- 18 • RLD-SUMP-00029/-00030. The Melter 1 Process Cell (L-0123) includes two sumps, RLD-
19 SUMP-00029/-00030, as part of the secondary containment system for tanks and MUs
20 located in this cell. The Melter 1 Process Cell (L-0123) houses the following tanks and MUs:
 - 21 ○ Concentrate Receipt Vessel LCP-VSL-00001
 - 22 ○ Melter 1 Feed Preparation Vessel LFP-VSL-00001
 - 23 ○ Melter 1 Feed Vessel LFP-VSL-00002
 - 24 ○ Melter 1 SBS LOP-SCB-00001
 - 25 ○ Melter 1 WESP LOP-WESP-00001
 - 26 ○ Melter 1 SBS Condensate Vessel LOP-VSL-00001
 - 27

28 The LAW sumps located in the Melter 1 Process Cell (L-0123) are dry sumps, designed to
29 also provide leak detection from the following sources:

- 30 ○ RLD-SUMP-00029 from LCP-BULGE-00001/2 and LOP-BULGE-00001 drain
- 31 ○ RLD-SUMP-00030 from LFP-BULGE-00001 drain
- 32

33 The floor of the cell is sloped to drain potential spillage to a sump at the base of the east or
34 west wall.
35

36 Each sump is equipped with one permanently installed submersible pump (RLD-PMP-
37 00025/-00026). The sumps have liquid level detection and alarms. The contents of RLD-
38 SUMP-00029/-00030 are transferred to Plant Wash Vessel RLD-VSL-00004 at the same
39 elevation within 24 hrs.
40

- 41 • RLD-SUMP-00031/-00032. The Melter 2 Process Cell (L-0124) includes two dry sumps,
42 RLD-SUMP-00031/-00032, as part of the secondary containment system for tanks and
43 MUs located in this cell. The sumps have permanently installed submersible sump pumps
44

1 and have liquid level detection with alarms. The Melter 2 Process Cell (L-0124) houses the
2 following tanks and MUs:

- 3 ○ Concentrate Receipt Vessel LCP-VSL-00002
- 4 ○ Melter 2 Feed Preparation Vessel LFP-VSL-00003
- 5 ○ Melter 2 Feed Vessel LFP-VSL-00004
- 6 ○ Melter 2 SBS LOP-SCB-00002
- 7 ○ Melter 2 WESP LOP-WESP-00002
- 8 ○ Melter 2 SBS Condensate Vessel LOP-VSL-00002

9
10 The LAW sumps located in the Melter 2 Process Cell (L-0124) are designed to also provide
11 leak detection from the following sources:

- 12 ○ RLD-SUMP-00031 from LCP-BULGE-00003 and LOP-BULGE-00002 drain
- 13 ○ RLD-SUMP-00032 from LFP-BULGE-00002 drain

14 The floor of the cell is sloped to drain potential spillage to a sump at the base of the east or
15 west wall.

16 Each sump is equipped with one pump (RLD-PMP-00027/-00028). The contents of RLD-
17 SUMP-00031/-00032 are transferred to Plant Wash Vessel RLD-VSL-00004 at the same
18 elevation within 24 hrs.

- 19 ● RLD-SUMP-00035/-00036. Two sumps RLD-SUMP-00035/-00036, located in Effluent Cell
20 (L-0126), are part of the secondary containment system for Plant Wash Vessel RLD-VSL-
21 00003 and SBS Condensate Collection Vessel RLD-VSL-00005. Each sump RLD-SUMP-
22 00035/-00036 is equipped with one permanently installed submersible sump pump (RLD-
23 PMP-00031/-00032) with liquid level detection and alarms. The sump RLD-SUMP-00036 is
24 designed to also detect leaks from RLD-BULGE-00004. The contents of RLD-SUMP-
25 00035/-00036 are normally transferred to C3/C5 Drain/Sump Collection Vessel RLD-VSL-
26 00004 within 24 hrs. In off-normal events, the valves located in C3/C5/Drains/Sump
27 Collection Pump Bulge RLD-BULGE-00001 allow transfers from C3/C5 Drain/Sump
28 Collection Vessel RLD-VSL-00004 to Plant Wash Vessel RLD-VSL-00003 or SBS
29 Condensate Collection Vessel RLD-VSL-00005, using transfer pumps RLD-PMP-
30 00002A/B.

31 32 **4.1.3.5 Radioactive Solid Waste Handling (RWH) System**

33 The primary functions of this system will be to provide equipment for the change out of LAW
34 process vessels and other miscellaneous mixed wastes. This system provides the equipment to
35 move waste out of the building.

36 The vessels are designed for 40 years of service. However, in the event of a failure, the process
37 vessel will be prepared for export by rinsing, disconnection of the process lines, and
38 decontamination. The vessel will be lifted out of the process cell and covered to prevent a spread
39 of contamination. The vessel will be placed in an approved package staged for vessel receipt.
40 Once closed and secured, the package, containing the vessel, will be delivered to an appropriate

1 performed prior to each transfer. The contents are transferred to the PWD system in the
2 pretreatment facility for treatment, as required.

3 Plant Wash and Drains Vessel (RLD-VSL-00008)

4 This vessel collects liquids from vessels, sumps, and plant washes within the HLW facility,
5 including wash water from cell floors, equipment exterior surfaces, and stainless steel liners.
6 This vessel also collects the C3 area fire water. Sampling will be performed by an automated
7 sample system to characterize the liquid waste. The contents are transferred to the PWD system
8 in the pretreatment facility for treatment, as required.

9 Offgas Drains Collection Vessel (RLD-VSL-00002)

10 This vessel receives condensate from the HOP pipes and PJV drains downstream from the High-
11 Efficiency Mist Eliminator (HOP-HEME-00001A/1B/2A/2B) during off-normal operation. The
12 contents are transferred to the Plant Wash and Drains Vessel (RLD-VSL-00008) in the HLW
13 facility for processing.

15 **HLW Secondary containment sumps and drains.**

16
17 The HLW sumps and drains described below are part of the secondary containment and leak
18 detection for the HLW tank and MU systems. The sumps are equipped with radar-type or
19 bubbler level detectors and have either ejectors or pumps. The sumps are equipped with 100%
20 capacity ejectors which have the ability to remove spills, leaks, or accumulated liquid from the
21 secondary containment system within 24 hours. The sumps are dry sumps lined with
22 molybdenum (6 moly) stainless steel liner material. Detailed information on location and design
23 for each HLW permitted secondary containment sump and drain is provided in Table C-9, WTP
24 Sumps, Leak Detection Boxes, and Floor Drains/Lines. All HLW sumps are shown on the HLW
25 RLD system P&IDs.

26
27 Leak detection capabilities are described in *Leak Detection Capability in the HLW Facility*
28 24590-HLW-PER-M-04-002, located in Appendix 10.18. The HLW waste removal capabilities
29 are described in *HLW Facility Waste Removal Capability* 24590-HLW-PER-M-04-0001, located
30 in Appendix 10.18.

31
32 The design and functions of the HLW sumps are summarized below:

- 34 • HCP-SUMP-00001. This sump, located in the south section of the Wet Process Cell (H-
35 B014), is part of the secondary containment system for Acidic Waste Vessel
36 RLD-VSL-00007 and Plant Wash and Drains Vessel RLD-VSL-00008. The sump is
37 equipped with two ejectors (RLD-EJCTR-00049A/B). The sump contents are normally
38 ejected to the Plant Wash and Drains Vessel RLD-VSL-00008 via a pipe manifold. The
39 second transfer path is to RLD-VSL-00007.
- 41 • RLD-SUMP-00001. This sump, located in the north section of the Wet Process Cell (H-
42 B014), is part of the secondary containment system for Offgas Drains Collection Vessel
43

1 RLD-VSL-00002. This sump is equipped with two ejectors (RLD-EJCTR-00052A/B). The
2 sump contents are ejected to the Plant Wash and Drains Vessel RLD-VSL-00008.

- 3 • HPH-SUMP-00003. This sump, located in Pour Tunnel 1 (H-B032), is part of the secondary
4 containment system for ancillary equipment piping only; there are no tanks or MUs located
5 in this room. The sump is equipped with one ejector (RLD-EJCTR-00014). The sump
6 contents are ejected to the Plant Wash and Drains Vessel RLD-VSL-00008.

- 7 • HDH-SUMP-00001. This sump, located in the Canister Rinse Tunnel (H-B039B), is part of
8 the secondary containment system for Canister Rinse Vessel HDH-VSL-00001. The sump is
9 equipped with one ejector (RLD-EJCTR-00055) to transfer the sump contents to the Plant
10 Wash and Drains Vessel (RLD-VSL-00008).

- 11 • HDH-SUMP-00002. This sump is located in the Canister Rinse-Bogie Maintenance Room
12 (H-B039A). There are no tanks or MUs permanently located in this room, however, the
13 emptied Canister Rinse Bogie Vessel HDH-VSL-00001 is periodically moved into this room
14 for bogie maintenance. This sump is equipped with one pump (RLD-PMP-00023) to transfer
15 the sump contents to the Plant Wash and Drains vessel RLD-VSL-00008.

- 16 • HDH-SUMP-00003. This sump, located in the Canister Decon Cave (H-B035), is part of the
17 secondary containment system for three tanks:

- 18 ○ Canister Decon Vessel 1 HDH-VSL-00002
19 ○ Waste Neutralization Vessel HDH-VSL-00003
20 ○ Canister Decon Vessel 2 HDH-VSL-00004
21

22 The sump is equipped with one ejector (RLD-EJCTR-00054) to transfer the sump contents to
23 the Plant Wash and Drains vessel RLD-VSL-00008.
24

- 25 • HOP-SUMP-00003. This sump, located in SBS Drain Collection Cell 1 (H-B021), is part of
26 the secondary containment system for SBS Condensate Collection Vessel HOP-VSL-00903.
27 This sump is equipped with two ejectors (RLD-EJCTR-00053A/B). This sump is also
28 designed to detect leaks through the gravity floor drain from the secondary containment
29 bermed area located in the west section of Melter Cave 1 (H-0117). The west section of
30 Melter Cave 1 is designed with a secondary containment berm for Melter 1 SBS
31 HOP-SCB-00001 and HEMEs HOP-HEME-00001A/B. The bermed area includes a low
32 point floor drain line (RLD-ZF-03330-S11B-03) to HOP-SUMP-00003 located directly
33 below the bermed area. The contents of HOP-SUMP-00003 are transferred to Plant Wash
34 and Drains Vessel RLD-VSL-00008.
35

- 36 • HOP-SUMP-00008. This sump, located in SBS Drain Collection Cell 2 (H-B005), is part of
37 the secondary containment system for SBS Condensate Collection Vessel HOP-VSL-00904.
38 This sump is equipped with two ejectors (RLD-EJCTR-00176A/B). This sump is also
39 designed to detect leaks through the gravity floor drain from the secondary containment
40 bermed area located in the west section of Melter Cave 2 (H-0106). The west section of
41
42
43

1 Melter Cave 2 is designed with a secondary containment berm for Melter 2 SBS
2 HOP-SCB-00002 and HEMEs HOP-HEME-00002A/B. The bermed area includes a low
3 point floor drain line (RLD-ZF-03447-S11B-03) to HOP-SUMP-00008 located directly
4 below the bermed area. The contents of HOP-SUMP-00008 are transferred to Plant Wash
5 and Drains Vessel RLD-VSL-00008.
6

- 7 • HSH-SUMP-00003. This sump, located in the central section of Melter Cave 1 (H-0117), is
8 part of the secondary containment system for ancillary equipment piping associated with the
9 HLW Melter 1 HMP-MLTR-00001. This sump is equipped with one ejector (RLD-EJCTR-
10 000171). The contents of HSH-SUMP-00003 are transferred to the Plant Wash and Drains
11 Vessel RLD-VSL-00008. This sump is also equipped with a removable sump basket.
12
- 13 • HSH-SUMP-00007. This sump, located in the central section of Melter Cave 2 (H-0106), is
14 part of the secondary containment system for ancillary equipment associated with the HLW
15 Melter 2 HMP-MLTR-00002. This sump is equipped with one ejector (RLD-EJCTR-
16 00179). The contents of HSH-SUMP-00007 are transferred to the Plant Wash and Drains
17 Vessel RLD-VSL-00008. This sump is also equipped with a removable sump basket.
18
- 19 • HFP-SUMP-00002. This sump, located in the bermed south section of Melter Cave 1
20 (H-0117), is part of the secondary containment system for Melter 1 Feed Preparation Vessel
21 HFP-VSL-00001 and Melter 1 Feed Vessel HFP-VSL-00002. This sump is equipped with
22 one ejector (RLD-EJCTR-000172). The contents of HFP-SUMP-00002 are transferred to
23 Plant Wash and Drains Vessel RLD-VSL-00008.
24
- 25 • HFP-SUMP-00005. This sump, located in the bermed south section of Melter Cave 2 (H-
26 0106), is part of the secondary containment system for Melter 2 Feed Preparation Vessel
27 HFP-VSL-00005 and Melter 2 Feed Vessel HFP-VSL-00006. This sump is equipped with
28 one ejector (RLD-EJCTR-000178). The contents of HFP-SUMP-00005 are transferred to
29 Plant Wash and Drains Vessel RLD-VSL-00008.
30
- 31 • HSH-SUMP-00008. This sump, located in the Melter 1 Cave Decon Pit (H-0310A), is part
32 of the secondary containment system for Decontamination Tank 1 HSH-TK-00001. This
33 sump is equipped with one ejector (RLD-EJCTR-00026) to transfer the sump contents to
34 Plant Wash and Drains Vessel RLD-VSL-00008. This sump is also equipped with a
35 removable sump basket.
36
- 37 • HSH-SUMP-00009. This sump, located in the Melter 2 Cave Decon Pit (H-0304A), is part
38 of the secondary containment system for Decontamination Tank 2 HSH-TK-00002. This
39 sump is equipped with one ejector (RLD-EJCTR-00173) to transfer the sump contents to
40 Plant Wash and Drains Vessel RLD-VSL-00008. This sump is also equipped with a
41 removable sump basket.
42
- 43 • HPH-SUMP-00001 and HPH-SUMP-00005. These sumps, located in the Canister Handling
44 Cave (H-0136), are part of the secondary containment system for ancillary equipment piping
45

1 only; there are no tanks or MUs located in this room. Each of these sumps is equipped with
2 one ejector (RLD-EJCTR-00051/-00029) to transfer the sump contents to Plant Wash and
3 Drains Vessel RLD-VSL-00008.
4

- 5 • RLD-FD-00186. The Active Services Cell 1 (H-0308) includes one gravity flow floor drain
6 (RLD-FD-00186) that is part of the secondary containment for WESP HOP-WESP-00001.
7 The RLD-FD-00186 drains to HCP-SUMP-00001.
8
- 9 • RLD-FD-00187. The Active Services Cell 2 (H-0302) includes one gravity flow floor drain
10 (RLD-FD-00187) that is part of the secondary containment for WESPs HOP-WESP-00002.
11 The RLD-FD-00187 drains to HCP-SUMP-00001.
12

13 **4.1.4.7 IHLW Glass Canister Handling Process**

14 The IHLW glass canister handling will consist of the following systems:

- 15 • HLW canister receipt handling (HRH) system
- 16 • HLW canister pour handling (HPH) system
- 17 • HLW canister decontamination handling (HDH) system
- 18 • HLW canister export handling (HEH) system

19 The individual systems and their primary functions are described below:

20 HLW Canister Receipt Handling (HRH) System

21 The HRH system consists of the equipment, controls, and interlocks required for importing a
22 clean canister into the facility. This system consists of the canister import truck bay, the canister
23 import room, and the canister import tunnel. These areas are located on the south side of the
24 facility.

25 The sequence of operations and the equipment used for canister import are as follows:

- 26 • The shipping crates are unloaded from the transport truck with the canister import crane
27 and placed in the staging area.
- 28 • The canisters are then individually removed from the shipping crate and set on the
29 canister inspection/rotation table.
- 30 • The canister import room roller shutter door is opened and the canister inspection/rotation
31 table rotates the canister to vertical. The canister import monorail hoist and grapple lift
32 and transfer the canister to the canister import room. The canister is either set in the
33 canister import buffer rack or placed in the canister import bogie. When the canister is
34 transferred to the canister import tunnel, the shielded clean canister import hatch is
35 opened and the canister is lowered into the canister import bogie below, and the hatch is
36 closed and sealed.
- 37 • The canister import bogie is transferred under the canister handling cave to the shielded
38 canister handling cave import hatch location. The canister handling cave hatch is then
39 opened and the canister handling cave crane and grapple raises the canister into the
40

1 not a permitted activity, manufacturer cut sheets for support equipment in these rooms is not
2 included in the package. The fifth room is Room A-139D, the airlock/clean drum export area.
3 This area is used to provide additional storage, segregation, and management of waste containers
4 prior to transfer to WTP, Hanford Site, or off-site waste disposal facilities.

5 **4.1.5.5 Radioactive Dangerous Liquid Waste Disposal (RLD) System**

6 The analytical laboratory RLD system is primarily composed of the following:

- 7 • Floor Drain Collection Vessel (RLD-VSL-00163)
- 8 • Laboratory Area Sink Collection Vessel (RLD-VSL-00164)
- 9 • Hotcell Drain Collection Vessel (RLD-VSL-00165)
- 10 • Associated ancillary equipment

11 The Floor Drain Collection Vessel (RLD-VSL-00163) collects, contains, and transfers
12 noncontaminated liquid effluent. The floor drain collection vessel is identified as part of the
13 RLD system. It is not designed or permitted to manage mixed or dangerous wastes. If a spill or
14 release were to occur that contaminated this vessel, the vessel will be discharged to the
15 Laboratory Area Sink Collection Vessel (RLD-VSL-00164) or the Hotcell Drain Collection
16 Vessel (RLD-VSL-00165) and rinsed with water prior to being returned to service. This vessel
17 collects effluent from radiological laboratory floor drains, eyewash, and safety shower
18 equipment. The vessel also collects effluent from the C2 area floor drains located in areas such
19 as the laboratory area corridors, hotcell bay area, and the filter room.

20 Liquid waste management in the hotcell will require remote handling prior to disposal to the
21 Hotcell Drain Collection Vessel (RLD-VSL-00165) from low point drains. Aqueous liquid
22 waste consists of samples (unused and residues), dilutions, and dissolution aliquots prepared for
23 analysis. Liquids will be partially neutralized to reduce corrosivity before they are discharged to
24 the liquid waste system. Containers of aqueous liquids for disposal are moved to and poured
25 down low-point drain using the MSMs along with a minimum of 0.5 gallons flush water for each
26 20 mL of waste. Liquid waste information (including quantity of liquid waste per disposal and
27 identification of the sample that generated the waste) is updated in LIMS using the computer
28 workstation.

29 **LAB Secondary containment sumps, leak detection boxes, and drains.**

30 The LAB sumps, drains, and leak detection boxes described below are part of the secondary
31 containment and leak detection for the RLD tank system. The sump, drain, and leak detection
32 box location and design information is provided in Table C-9, WTP Sumps, Leak Detection
33 Boxes, and Floor Drains/Lines.

34 To minimize the potential for radioactive contamination, in-cell sumps collect periodic
35 washdowns of cells. Built-in spray rings are installed to facilitate waste removal and
36 decontamination.
37
38

1 Leak detection capabilities are described in *Lab Minimum Leak Rate Detection Capabilities for*
2 *Leak Detection Boxes, Cell Sumps, and Pit Sumps* 24590-LAB-PER-M-04-0001, located in
3 Appendix 11.18. The LAB waste removal capabilities are described in *LAB Waste Removal*
4 *Capability for the Effluent Vessel Cells* 24590-LAB-PER-M-04-0002, located in Appendix
5 11.18.
6

7 **Pump and piping pits.** The LAB pump and piping pits are structural compartments that house
8 maintainable equipment in segregated locations where the equipment is readily accessible for
9 maintenance and remote manual operation, the area can be readily decontaminated to support
10 maintenance activities, and the equipment is shielded from high radiation fields emanating from
11 the vessels. The pump and piping pits are provided with secondary containment stainless steel
12 liners. The floors of the pits are sloped to direct potential leakage to their respective sumps.
13 Each pump and piping pit includes a sump that is equipped with a removable weir and a radar
14 level sensor for leak detection. The pump and piping pits are provided with wash rings to
15 support maintenance activities or facilitate decontamination in the event of a spill. Access to the
16 pump and piping pits is achieved via the removal of the pit covers.
17

18 LAB pump and piping pits

Cell Name	Room No.	Equipment	Leak Detection/Sump
C3 Pump Pit	A-B002	RLD-PMP-00182A/B	RLD-SUMP-00045
C5 Pump Pit (south)	A-B007	RLD-PMP-00183A	RLD-SUMP-0043A
C5 Piping Pit	A-B006	Valves and Piping for RLD-PMP-00183A/B	RLD-SUMP-00044
C5 Pump Pit (north)	A-B005	RLD-PMP-00183B	RLD-SUMP-00043B

20
21
22 **LAB sumps.** The LAB sumps are located in stainless steel lined secondary containment cells
23 designed with floor sloping in the direction of the sump. They are dry sumps and design and
24 functions of the LAB sumps are summarized below:

- 25 • RLD-SUMP-00041. This sump is located in C3 Effluent Cell (A-B003) and equipped with
26 radar level detection. RLD-SUMP-00041 is equipped with two pumps (RLD-PMP-
27 00182A/B). The contents of RLD-SUMP-00041 are transferred to Hot Cell Drain Collection
28 Vessel RLD-VSL-00165, located in room A-B004, or Lab Sink Drain Collection Vessel
29 RLD-VSL-00164, located in room A-B003.
- 30 • RLD-SUMP-00042. This sump is located in C5 Effluent Cell (A-B004). RLD-SUMP-
31 00042 is similar to the RLD-SUMP-00041 described above. The sump is equipped with radar
32 level detection and is emptied by one of two pumps (RLD-PMP-00183A/B) into PTF vessel
33 PWD-VSL-00044, through a buried, double-pipe (duplex) transfer line, or Hot Cell Drain
34 Collection Vessel RLD-VSL-00165, in room A-B004.

- 1
- 2 • RLD-SUMP-00045. This sump is located in C3 Pump and Piping Pit (A-B002). The liner on
3 the floor of the pit consists of several sloped plates that direct potential leakage and
4 washwater (during maintenance) to a drain located at the lowest point in the pit. The sump is
5 formed by a rectangular depression in the stainless steel liner around the drain that includes a
6 removable weir. The volume of the sump is equal to the volume created by the depression in
7 the liner in the vicinity of the drain and the height of the weir. This volume is limited to a
8 maximum value of 2.4 gallons in order to be able to detect a design basis leak of 0.1 gal/h in
9 24 hours. With the weir installed, a detectable level is formed in the sump to allow the radar
10 to sense potential liquids. The liquid spills over the weir and drains to the Lab Sink Drain
11 Collection Vessel RLD-VSL-00164. When the liquid is detected in the sump, the operator
12 manually removes the weir from the sump via an extended drive spindle to allow the sump
13 contents to drain by gravity to the vessel. The weir may be removed during maintenance to
14 preclude the accumulation of washwater residues in the sump.
- 15 • RLD-SUMP-00043A/B (A-B007/A-B005) and RLD-SUMP-00044 (A-B006). These sumps
16 are located in C5 Pump and Piping Pit and are similar to the RLD-SUMP-00045 described
17 above. The drain line from the two C5 pump sumps and the one C5 piping pit sump is
18 located entirely within the C5 effluent vessel cell (A-B004). Hence, secondary containment
19 and leak detection for this drain line is provided by the C5 effluent vessel and the associated
20 radar leak detection system. These sumps drain to the Hot Cell Drain Collection Vessel
21 RLD-VSL-00165 via a common drain line.

22 **Leak detection boxes.** The LAB leak detection boxes RLD-LDB-00002, -00004, and -00009
23 are located in C5 Effluent Cell A-B004; boxes RLD-LDB-00005 through -00008 and -00011 are
24 located in C3 Effluent Vessel Cell A-B003. The leak detection boxes are connected to the
25 headers that drain to the Hotcell Drain Collection Vessel RLD-VSL-00165 and the Laboratory
26 Area Sink Drain Collection Vessel RLD-VSL-00164. The leak detection boxes are designed to
27 detect a leak in the annular space between the double-walled piping. Each box is installed with a
28 drain plug in the closed position to facilitate collecting a detectable volume of leaked waste.
29 Each box is equipped with a thermal dispersion level switch to detect liquid.

30 31 **4.1.5.6 Laboratory Maintenance** 32

33 The analytical laboratory maintenance shop provides space for performing preventive and 30
34 corrective maintenance on laboratory equipment. There will be two shops, located in different 31
35 potential contamination areas. The C3 shop allows decontamination, maintenance, and storage 32 of
36 contaminated equipment such as hotcell manipulators. The C3 maintenance shop will be 33
37 ventilated to the C3 ventilation system, and effluent from the C3 maintenance shop discharges to 34
38 the Laboratory Area Sink Collection Vessel (RLD-VSL-00164). The C2 shop will provide space 35
39 for the maintenance of equipment that is not expected to be radioactively contaminated such as 36
40 electrical components, utilities systems components, and instruments, and will be ventilated to 37 the
41 C2 ventilation system. A list of proposed maintenance activities that will be performed in the 38
42 analytical laboratory maintenance shops is provided below.
43
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