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1 Introduction

The Washington Administrative Code, WAC 173-303, *Dangerous Waste Regulations*, requires the use of secondary containment for systems managing dangerous waste. This document provides a brief description of the secondary containment sumps regulated under the Dangerous Waste Permit that are located at elevation -21 ft and elevation +3 ft of the Low-Activity Waste (LAW) Vitrification Facility. Detailed information about these sumps is included in Table 1. Effluent streams that drain into these sumps are listed in Table 2.

2 Applicable Documents

WAC 173-303. *Dangerous Waste Regulations*. Washington Administrative Code.

3 Description

3.1 Elevation -21 Ft Sumps

3.1.1 C3/C5 Drains/Sump Collection Vessel RLD-VSL-00004 Cell Sump

The C3/C5 Drains/Sump Collection Vessel cell sump (RLD-SUMP-00028) is in a C5 area at elevation -21 ft. It is a dry sump, approximately 24 inches in diameter and 30 inches deep, and is equipped with liquid level detection and alarm. Any overflow or leakage from the C3/C5 Drains/Sump Collection vessel (RLD-VSL-00004) or piping in the C3/C5 Drains/Sump Collection vessel cell flows to RLD-SUMP-00028. Overflow from the C3/C5 Drains/Sump Collection vessel (RLD-VSL-00004) flows to RLD-SUMP-00028. Similarly, leakage from piping or valves in LAW RLD-BULGE-00001 also flows to sump RLD-SUMP-00028. Any liquid collecting in the sump can be transferred within 24 hours to the Plant Wash Vessel (RLD-VSL-00003) at el. +3 ft. using permanently installed submersible sump pumps. Sump waste that is transferred to the Plant Wash Vessel (RLD-VSL-00003) is eventually transferred to the Pretreatment Facility for processing.

3.2 Elevation +3 Ft Sumps

At elevation +3 ft, there are eight sumps, RLD-SUMP-00029, RLD-SUMP-00030, RLD-SUMP-00031, RLD-SUMP-00032, RLD-SUMP-00033, RLD-SUMP-00034, RLD-SUMP-00035, and RLD-SUMP-00036. All of these sumps are dry sumps. Two of the sumps, (RLD-SUMP-00033 and RLD-SUMP-00034), are both located in the third melter process cell (Room L-0125) and currently not included in the Dangerous Waste Permit. These sumps (RLD-SUMP-00033 and RLD-SUMP-00034) have been constructed but, at this time sumps RLD-SUMP-00033 and RLD-SUMP-00034 do not have permanently installed sump pumps or liquid level detectors. The other remaining six sumps (RLD-SUMP-00029, RLD-SUMP-00030, RLD-SUMP-00031, RLD-SUMP-00032, RLD-SUMP-00035, and RLD-SUMP-00036) are provided with liquid level detection, alarms, and permanently installed submersible sump pumps. The submersible sump pumps transfer the sump contents to the Plant Wash Vessel (RLD-VSL-00003) located at the same elevation.

3.2.1 Process Cell Sumps

The melter feed system vessels and the primary offgas equipment for the two (2) LAW melters are located in two (2) lined process cells in the LAW Vitrification building. Each process cell contains the vessels and primary offgas equipment for a single LAW melter.

Process Cell for Melter 1, Room L-0123

LCP-VSL-00001	Concentrate Receipt Vessel
LFP-VSL-00001	Melter 1 Feed Preparation Vessel
LFP-VSL-00002	Melter 1 Feed Vessel
LOP-SCB-00001	Melter 1 Submerged Bed Scrubber (SBS)
LOP-WESP-00001	Melter 1 Wet Electrostatic Precipitator
LOP-VSL-00001	Melter 1 SBS Condensate Vessel

Process Cell for Melter 2, Room L-0124

LCP-VSL-00002	Concentrate Receipt Vessel
LFP-VSL-00003	Melter 2 Feed Preparation Vessel
LFP-VSL-00004	Melter 2 Feed Vessel
LOP-SCB-00002	Melter 2 Submerged Bed Scrubber
LOP-WESP-00002	Melter 2 Wet Electrostatic Precipitator
LOP-VSL-00002	Melter 2 SBS Condensate Vessel

Process Cell for Melter 3, Room L-0125

NONE

Each process cell is equipped with two sumps. The floor of the cell is sloped to drain potential spillage to a sump at the base of the east wall or west wall.

Water can be introduced into the sumps if needed for flushing.

Any liquids collecting in the process cell sumps can be transferred within twenty four hours to the Plant Wash Vessel (RLD-VSL-00003) using permanently installed submersible sump pumps.

The Melter 1 and Melter 2 process cell sumps are 12 inches deep by 30 inches in diameter, and are equipped with liquid level detection, liquid level alarms, and permanently installed submersible sump pumps. Sump waste transferred to the Plant Wash Vessel (RLD-VSL-00003) is eventually transferred to the Pretreatment Facility for processing.

3.2.2 Effluent Cell Sumps

The Plant Wash Vessel (RLD-VSL-00003) and the SBS Condensate Collection Vessel (RLD-VSL-00005) are located in the effluent cell, room L-0126. The Effluent Cell is provided with two sumps, one in the west end and another in the east end. Any material collected in the Effluent Cell sump can be transferred to the Plant Wash Vessel (RLD-VSL-00003) within twenty four hours, using permanently installed electric submersible sump pumps.

The Effluent Cell sumps are 12 inches deep by 30 inches in diameter, and are equipped with liquid level detection, liquid level alarms, and permanently installed sump pumps. Sump waste transferred to the Plant Wash Vessel (RLD-VSL-00003) is eventually transferred to the Pretreatment Facility for processing.

Table 1 - LAW Regulated Sumps

Sump Number	LAW Room Number & Elevation	Maximum Sump Capacity, gal	Sump Type	Sump Dimensions, Inch	Piping and Instrumentation Diagram Number 24590-LAW-M6-	Leak Detection Type	Sump Material of Fabrication
RLD-SUMP-00028	L-B001B C3/C5 Drains/Sump Collection Vessel Cell Elev. -21 ft	59	Dry Sump	24 Dia. x 30 Deep	RLD-P0002	Radar	UNS NO8367
RLD-SUMP-00029	L-0123 Process Cell West End Elev. +3 ft	30	Dry Sump	30 Dia. x 12 Deep	RLD-P0003	Radar	UNS NO8367
RLD-SUMP-00030	L-0123 Process Cell East End Elev. +3 ft	30	Dry Sump	30 Dia. x 12 Deep	RLD-P0003	Radar	UNS NO8367
RLD-SUMP-00031	L-0124 Process Cell Sump West End Elev. +3 ft	30	Dry Sump	30 Dia. x 12 Deep	RLD-P0003	Radar	UNS NO8367
RLD-SUMP-00032	L-0124 Process Cell Sump West End Elev. +3 ft	30	Dry Sump	30 Dia. x 12 Deep	RLD-P0003	Radar	UNS NO8367
RLD-SUMP-00035	L-0126 Effluent Cell West End Elev. +3 ft	30	Dry Sump	30 Dia. x 12 Deep	RLD-P0003	Radar	UNS NO8367
RLD-SUMP-00036	L-0126 Effluent Cell East End Elev. +3 ft	30	Dry Sump	30 Dia. x 12 Deep	RLD-P0003	Radar	UNS NO8367

Table 2 - Drains to LAW Sumps

Drain	Sump, LAW Room Number & Elevation	Max. Flow Capacity, gal/min*	Drain Type/Nom. Operating Volume, Gal	Drain Line Size (Pipe Dia.), Inch	Piping and Instrumentation Diagram Number 24590-LAW-M6-	Pipe Material of Fabrication
Pump Bulge RLD-BULGE-00001 Drain	RLD-SUMP-00028 L-B001B C3/C5	60		2		316L SS
Double-Walled Piping Outer Containment Drains	Drains/Sump Collection Vessel Cell Elev. -21 ft	10	N/A	1	RLD-P0002	316L SS
RLD-VSL-00004 Overflow		425		8		6 Moly
Primary Offgas (LOP) Melter 1 Valve Bulge Drain	RLD-SUMP-00029 L-0123 Process Cell West End Sump Elev. +3 ft	60	N/A	2	LOP-P0001	6 Moly
LCP-BULGE-00001/2 Drain		60		2		316L SS
Melter Feed Line Encasement Assembly (LMP-LDB-00001 drain)	RLD-SUMP-00030 L-0123 Process Cell East End Sump Elev. +3 ft	10	N/A	1	RLD-P0003	316L SS
Melter 1 Feed Prep/Feed Vessel Valve Bulge Drain		60		2	LFP-P0001	316L SS
Primary Offgas (LOP) Melter 2 Valve Bulge Drain	RLD-SUMP-00031 L-0124 Process Cell West End Sump Elev. +3 ft	60	N/A	2	LOP-P0002	6 Moly
LCP-BULGE-00003 Drain		60		2	LCP-P0002	316L SS
Melter Feed Line Encasement Assembly (LMP-LDB-00002 drain)	RLD-SUMP-00032 L-0124 Process Cell East End Sump Elev. +3 ft	10	N/A	1	LFP-P0003	316L SS
Melter 2 Feed Prep/Feed Vessel Valve Bulge Drain		60		2		316L SS
None	RLD-SUMP-00035 L-0126 Effluent Cell West End Sump Elev. +3 ft	N/A	N/A	N/A	N/A	N/A
Plant Wash Vessel/SBS Condensate Collection Vessel Valve Bulge Drain	RLD-SUMP-00036 L-0126 Effluent Cell East End Sump Elev. +3 ft	60	N/A	2	RLD-P0001	6 Moly

*Flow values are bounding, and based on Design Guide: 24590-WTP-GPG-M-022