INTEGRATED DISPOSAL FACILITY
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CHANGE CONTROL LOG

Change Control Logs ensure that changes to this unit are performed in a methodical, controlled, coordinated, and transparent manner. Each unit addendum will have its own change control log with a modification history table. The "**Modification Number**" represents Ecology's method for tracking the different versions of the permit. This log will serve as an up to date record of modifications and version history of the unit.

Modification History Table

Modification Date	Modification Number
06/09/2023	8C.2023.2F

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TERMS

ALR	Action Leakage Rate
IDF	Integrated Disposal Facility
LCRS	Leachate Collection and Removal System
LDS	Leak Detection System
PICS	Process Instrumentation and Control System
PLC	Programmable Logic Controller
RCRA	*Resource Conservation and Recovery Act of 1976*

C7.1 INTRODUCTION

This chapter contains the Leachate Monitoring Plan for the Integrated Disposal Facility (IDF) *Resource Conservation and Recovery Act of 1976* (RCRA) Subtitle C landfill. This plan addresses the applicable regulatory requirements of Washington Administrative Code (WAC) 173-303-665, *Landfills* regarding monitoring of the leachate collection and leak detection systems.

C7.2 LEACHATE MONITORING REQUIREMENTS

This section describes the leachate monitoring requirements for the following components of the IDF leachate management system:

- Leachate Collection and Removal System (LCRS).
- Leak Detection System (LDS).

For further information regarding design, construction, and dangerous or mixed waste management operations of the IDF, refer to Chapter 4.0, "Process Information."

The Process Instrumentation and Control System (PICS) located in the Crest Pad Buildings (219A and 291E) monitor and control the leachate management process control equipment, which includes alarms, flow meters, leachate level transmitters, flow rate indicators, and pumps. The PICS provides process data from leachate management instruments to the programmable logic controller (PLC) and Operator Interface Units. Process signals from each instrument are monitored for the purpose of controlling, displaying, recording, and alarming process data.

Monitoring gauges and instruments described in this plan shall be in current calibration. Calibrations will be performed annually or more frequently at intervals suggested by the manufacturer (Chapter 4.0).

Monitoring data will be maintained in the IDF portion of the Hanford Facility Operating Record in accordance with WA7890008967, Hanford Facility Resource Conservation and Recovery Act Permit, Condition II.I.1.

C7.2.1 Leachate Collection and Removal System Monitoring

LCRS operations ensure that the fluid head on the top liner does not exceed 30.5 cm (12.0 in.) measured above the LCRS sump floor (except for a rare storm event as discussed in Chapter 4.0).

Level sensors within the LCRS sump monitor leachate accumulation levels. The pumps in the LCRS sumps can be operated either manually by an operator or automatically by the PICS. When operated automatically, level sensors will cycle the LCRS pumps on and off in response to rising and falling leachate levels. The LCRS pumps will start automatically when the leachate level reaches the established start level setpoint, and shut down automatically when the sump has drained to the established stop level setpoint. The leachate monitoring operating parameters for the LCRS level alarms and indicators are provided in Table C7-1.

Table C7-1 Leachate Collection and Removal System Leachate Monitoring Operating Parameters

Equipment Description	Alarm/Interlock Description	Setpoint
LCRS Sump Level	HIGH Level Alarm	28 cm (11.0 in.) above LCRS sump floor
	HIGH-HIGH Level Alarm	30.5 cm (12.0 in.) above LCRS sump floor
LCRS Sump – Low Flow Pump	START Level	15.2 cm (6.0 in.) above LCRS sump floor
LCRS Sump – High Flow Pump	START Level	27.4 cm (10.8 in.) above LCRS sump floor

The LCRS is designed to accommodate the 25-year, 24-hour storm. In the unlikely occurrence of a storm event that exceeds the 25-year, 24-hour storm event, the LCRS is designed to temporarily store excess leachate. Liquid with a depth >30.5 cm (12.0 in.) above the LCRS liner, as measured above the LCRS sump floor, will be removed at the earliest practicable time after detection (not to exceed 5 working days).

The LCRS flow meters will be used to check, on a weekly basis during the active life, if the amount of leachate pumped from the LCRS sumps corresponds to the amount accumulated in the leachate collection units to verify proper function of the LCRS.

C7.2.2 Leak Detection System Monitoring

Accumulated liquid of pumpable quantities in the LDS are managed in a manner that does not allow the fluid head to exceed 30.5 cm (12.0 in.) above the LDS liner. Liquid with a depth > 30.5 cm (12.0 in.) above the LDS liner, as measured above the LDS sump floor, will be removed at the earliest practicable time after detection (not to exceed 5 working days).

The pump in the LDS can be operated either manually by an operator or automatically by the PICS. Level sensors within the LDS sump monitor leachate accumulation levels. When operated automatically, the level sensors will cycle the LDS pump on and off in response to rising and falling leachate levels. The LDS pump will start automatically when the leachate level reaches the established start level setpoint, and shut down automatically when the sump has drained to the established stop level setpoint. The leachate operating parameters for the LDS level alarms and indicators are provided in Table C7-2.

Table C7-2 Leak Detection System Leachate Monitoring Operating Parameters

Equipment Description	Alarm/Interlock Description	Setpoint
LDS Sump Level	HIGH Level Alarm	28 cm (11.0 in.) above LDS sump floor
	HIGH-HIGH Level Alarm	30.5 cm (12.0 in.) above LDS sump floor
LDS Sump – Low Flow Pump	START Level	27.4 cm (10.8 in.) above LDS sump floor

Leachate collected in the LDS sump is measured at least once each week (during the active life and closure period) to determine the leakage rate through the primary liner. An average daily measurement is compared to the established action leakage rate (ALR) (specified in Appendix 4A1, “Phase I Critical Systems Design Report,”) for the IDF. The ALR, as defined in WAC 173-303-665(8)(a), is the maximum design flow rate that the LDS can remove without the fluid head on the bottom liner exceeding 30.5 cm (12.0 in.).

During the active life and closure period of the IDF, the average daily ALR shall be calculated on a weekly basis to determine if the established ALR for the IDF has been exceeded per the requirements of WAC 173-303-665(8)(b). Figure 6-2 located in Chapter 6, “Procedures to Prevent Hazards,” provides an example of the typical average daily ALR calculation sheet. If it is determined that the ALR has been exceeded, the “Facility Response Action Plan” (located in Appendix 4C) shall be activated per the requirements of WAC 173-303-665(9)(a).

The LDS flow meter will be used to check, on a weekly basis during the active life, if the amount of leachate pumped from the LDS sumps corresponds to the amount accumulated in the leachate collection units to verify proper function of the LDS.

C7.2.3 Sampling and Analysis

Leachate from the LCRS will be sampled and analyzed monthly for the first year of operation of the disposal cell and quarterly thereafter. Additionally, leachate will be sampled and analyzed to meet waste acceptance criteria at the receiving treatment, storage, and disposal facility. Sampling and analysis activities are described in Appendix C7A, "Sampling and Analysis Plan for Integrated Disposal Facility Leachate."

C7.3 REFERENCES

Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901, et seq. Available at: http://www.epa.gov/rcraonline/.

WA7890008967, Hanford Facility Resource Conservation and Recovery Act Permit, as amended, Washington State Department of Ecology, Richland, Washington. Available at: https://fortress.wa.gov/ecy/nwp/permitting/hdwp/rev/8c/index.html.

WAC 173-303, *Dangerous Waste Regulations*, Washington Administrative Code, Olympia, Washington. Available at: http://apps.leg.wa.gov/WAC/default.aspx?cite=173-303.

303-665, *Landfills*.

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