

**LEACHATE MANAGEMENT
CONTINGENCY PLAN 1823
FOR THE
ON-SITE DISPOSAL FACILITY**

**FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
HAMILTON, OHIO**



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**U. S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE**

**20110-PL-0002
REVISION 1**

TABLE OF CONTENTS

Table of Contents i

List of Figures and Tables i

List of Acronyms ii

1.0 Purpose 1

2.0 Contingency Plan 1

3.0 Regulatory Drivers 5

4.0 Deliverables 5

LIST OF FIGURES AND TABLES

Figure 1 Leachate Management Contingency Plan 2

Table 1 Pertinent ARARs for Leachate Management Contingency Plan 7

LIST OF ACRONYMS

1823

ARAR	applicable or relevant and appropriate requirement
AWWT	Advanced Waste Water Treatment
BSL	Biodenitrification Surge Lagoon
EPA	U. S. Environmental Protection Agency
FEMP	Fernald Environmental Management Project
gpm	gallons per minute
LCS	Leachate Collection System
LDS	Leak Detection System
OAC	Ohio Administrative Code
OEPA	Ohio Environmental Protection Agency
OSDF	On-Site Disposal Facility
PLS	permanent lift station

1.0 PURPOSE

The On-Site Disposal Facility (OSDF) is being constructed at the Fernald Environmental Management Project (FEMP) to contain 2.5 million cubic yards of soil and debris generated during remediation. The OSDF includes the leachate collection system (LCS) that will collect leachate from each OSDF cell both during construction (impacted material placement) and after completion of the OSDF and will convey the leachate to the Bionitrification Surge Lagoon (BSL) for eventual treatment in the Advanced Wastewater Treatment (AWWT) Facility. Following treatment, the leachate will be discharged to the Great Miami River. In case of any extended failure or breakdown of the LCS, this contingency plan will be implemented for leachate management.

2.0 CONTINGENCY PLAN

The contingency plan described below and illustrated in Figure 1 would be implemented in the event that the leachate collection and/or transmission system is not operational for an extended period of time during OSDF construction and waste placement. A change in LCS management may be required as a result of a leak or blockage in the piping between a manhole, the permanent lift station (PLS), and the BSL or a problem with the PLS pumps for an extended period (i.e., extended power outage). Due to the undefined scope and the uncertainties associated with the details of future construction and waste placement phases for the OSDF, the contingency plan may require revisions so that the specific details of leachate and stormwater generation and management can be addressed. Any future revisions will be based on the general leachate management approach presented in this contingency plan.

The LCS consists of the following:

- a series of LCS manholes (one for each cell of the OSDF) and gravity pipelines from each cell to the LCS manholes;
- a gravity pipeline from the LCS manholes to the PLS;
- duplex pumps at the PLS;

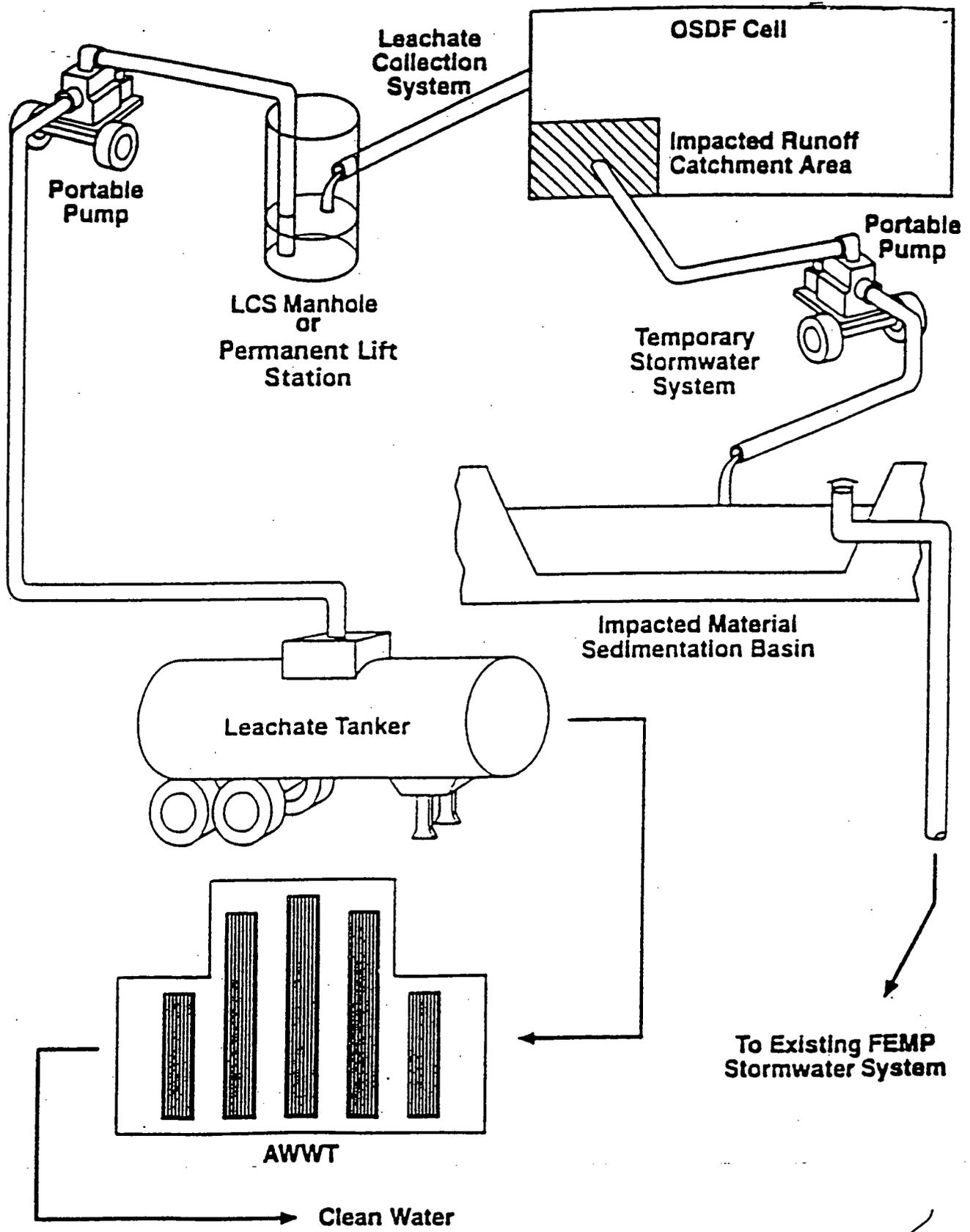


Figure 1 - Leachate Management Contingency Plan

5

- a force main from the PLS to the BSL; and
- an existing pipeline from the BSL to the AWWT Facility.

For the purpose of this contingency plan, impacted runoff which infiltrates through the LCS and leak detection system (LDS) layers of the OSDF is considered leachate; runoff collected in the OSDF cells that does not infiltrate through the LCS or LDS layers is considered to be impacted runoff. Methods to be implemented under this contingency plan for leachate management and impacted runoff management during OSDF construction and waste placement are described below.

Leachate Management

Leachate generation has begun in the OSDF. The footprint of each cell, including a one-acre granular stormwater runoff catchment area, is approximately seven acres. The maximum leachate generation rate from a cell during impacted material placement is approximately 200 gallons per minute (gpm). To control and manage the leachate from any cell during waste placement under this contingency plan the following will be implemented.

1. Close the valves in LCS manhole on the leachate collection pipeline and redundant leachate collection pipelines.
2. Provide a temporary plastic cover over the granular catchment area in each effected cell. It is estimated that covering the granular catchment area will reduce the leachate generation rate from a cell to approximately 8-10 gpm (12,000 gallons per day).
3. After Items 1 and 2 are implemented, LCS manhole or the PLS will serve as an interim wet well depending on the location of the LCS failure or breakdown. The LCS manhole could be converted into an interim wet well by removing the piping manifold inside the manhole and installing blank flanges on all but the incoming leachate collection pipeline from a cell. The On-Site Disposal Facility (OSDF) Project will obtain the standing permits (permits issued prior to initiating work activities) required to enter the manholes on an as needed basis. As such, there will not be any time issue to obtain the required

permits. The work required to remove the piping manifold and install the blank flanges would require no more than 8 hours.

Leachate flow into the wet well will be controlled by valves on the leachate collection pipeline in the LCS manhole and/or outside the PLS. From the wet well (LCS manhole or the PLS), leachate will be pumped to a 6,000 gallon tanker parked outside the wet well (refer to Figure 1) and transported to the AWWT Facility for treatment.

During implementation of this contingency plan, the valves in the LCS manhole or the PLS will be opened each day by a qualified Waste Water Pump Operator who is under the supervision of Aquifer Restoration Waste Water Operations. The operator will notify the supervisor if enough leachate has accumulated for transfer to the AWWT. If a rain event has resulted in peak generation of leachate (12,000 gallons per day), two tanker trips will be scheduled per day until the flow is minimal. A qualified Motor Vehicle Operator will drive the tanker to the AWWT.

Impacted Runoff

The level of leachate in a Cell will be controlled by managing impacted runoff. The following impacted runoff management methods will be implemented after leachate management Items 1 and 2 are implemented:

1. Method 1: Under this method, the leachate level in a cell will be controlled by pumping impacted runoff from the granular catchment area to a drainage ditch which discharges into an Impacted Runoff Sedimentation Basin. Based on the size of a cell and conservatively assuming 100 percent generation of impacted runoff, each inch of rainfall may require pumping of 175,000 gallons of impacted runoff. A gasoline-powered, high-volume construction dewatering (trash) pump will be used to control leachate in a cell. Pumps of this type are available from numerous local suppliers to purchase or rent.
2. Method 2: Depending on the location of the failure or breakdown in the LCS, impacted runoff from a cell will be pumped into the LCS gravity pipeline between a LCS manhole

and the PLS. An above-grade, quick-connect coupling is provided at LCS Manhole #1 to pump impacted runoff into the LCS gravity pipeline but will be limited to approximately 200 gpm. Similar pumps as those described in Method 1 above will be used to pump impacted runoff to the LCS gravity pipeline.

Method 2 is identified for use only if:

A. The FEMP plant storm drainage system; and/or the Storm Water Retention Basin (SWRB) has been determined to be unavailable for handling impacted runoff from the OSDF during the implementation of the contingency plan.

or

B. Additional pumping of impacted runoff is required to empty the runoff in cell (catchment area) from a rainfall event greater than the design storm.

Method 2 provides the option to use the LCS gravity pipeline to the Permanent Lift Station (albeit a restricted flow) and then to the AWWT Plant via the surge lagoon for treatment via the existing pumps or tanker. Method 2 will take a little longer to "process" the impacted runoff, but it will provide a means to empty/handle the runoff and dry out a cell in order to resume impacted material placement.

3.0 REGULATORY DRIVERS

The Operable Unit 2 Record of Decision established the applicable or relevant and appropriate requirements (ARARs) for the construction, operation, and closure of the OSDF, including the LCS. The pertinent requirements for activities performed under this leachate management contingency plan have been identified to ensure that compliance with ARARs is maintained. These requirements, which are from the Ohio Solid Waste Disposal Regulations and contained in the Ohio Administrative Code (OAC), and a discussion of how the contingency plan will comply with these requirements are presented in Table 1.

1823

20110-PL-0002
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4.0 DELIVERABLES

Two deliverables will be submitted to U.S. Environmental Protection Agency (EPA) and Ohio Environmental Protection Agency (OEPA) in the event that this contingency plan is implemented. The first will be a letter to notify EPA and OEPA that the contingency plan has been implemented. This notification will identify the date leachate collection began, the situation which prompted activation of this contingency plan, and an estimated schedule of when the LCS will again be fully operational. The second deliverable will notify EPA and OEPA that implementation of the contingency plan has been terminated and use of the permanent LCS has resumed.

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TABLE 1
Pertinent ARARs for Leachate Management Contingency Plan

Citation	Requirements	Compliance Discussion
1. OAC 3745-27-08(C)(4)	The leachate management system shall be designed to limit the level of leachate in areas other than lift stations to a maximum of one foot.	Under the controlled leachate generation rate of 12,000 gallons of accumulation in one day, the level of leachate over an entire cell drainage layer will be less than 1 foot.
2. OAC 3745-27-08(C)(4)(e)	If manholes are used as lift stations, they shall be equipped with automatic high level alarms located no greater than six feet above the invert of the leachate inlet pipe. Lift station pumps shall be of adequate capacity and shall automatically commence pumping before the leachate elevation activates the high level alarm.	High-level alarms will be installed in manholes and the PLS. However, under this contingency plan, leachate will not flow freely into manholes or the PLS. The valve will be controlled by personnel that will visually monitor the level of leachate in the manhole or PLS any time the valve is open. Because of the flow control and visual monitoring, a pump that automatically commences pumping is not necessary for this contingency operation.
3. OAC 3745-27-19(K)(2)	The owner or operator shall maintain at least one life station back-up pump at the sanitary waste landfill at all times.	The portable pumps that will be used to pump leachate and impacted runoff are readily available at local equipment suppliers and could be procured in a matter of hours if necessary. In addition, emergency back-up pumps are available on site.
4. OAC 3745-27-19(K)(4)	If authorized by the Director, the owner or operator may temporarily store leachate within the limits of waste placement until the leachate can be treated and disposed.	Under this contingency plan, leachate may be stored within the drainage layer until daily pumping.
5. OAC 3745-27-19(K)(5)	The owner or operator shall treat and dispose of collected leachate in accordance with the following: <ul style="list-style-type: none"> • treat and dispose of collected leachate on site at the sanitary landfill facility; • pretreat collected leachate on site and dispose of collected leachate off site of the sanitary landfill facility; and • treat and dispose of collected leachate off site of the sanitary landfill facility. 	The leachate generated by the OSDF will be treated on site at the AWWT and discharged to the Great Miami River.

10