



# Hardee County Solid Waste Department

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## Leachate Collection Removal System Standard Operating Procedures for Operations, Monitoring, and Maintenance

### 1. Purpose

- 1.1 To provide a Standard Operating Procedure (SOP) for the operation, monitoring, and maintenance of the leachate collection and removal system (LCRS) to ensure all staff are trained in operation, storage, record keeping, and removal of leachate.

### 2. Scope

- 2.1 This SOP applies to all solid waste employees of the Hardee County Landfill. Individuals will be trained and instructed on procedures, techniques, and guidelines as his/her job requires. This SOP outlines the minimum requirements.

### 3. Responsibilities

- 3.1 It is the responsibility of the Solid Waste Manager, crew leaders, and equipment operators to follow the procedures and guidelines outlined in this SOP.

### 4. Definitions

- 4.1 **Leachate** - Surface water runoff that comes into contact with solid waste.
- 4.2 **LCRS** - Leachate Collection and Removal System
- 4.3 **GPM** - Gallons per minute

### 5. Background

- 5.1 Leachate Collection Systems - Surface water runoff that comes into contact with solid waste is considered leachate.
  - 5.1.1 **Phase I LCRS** - System to remove the leachate from within the Phase I disposal area.
  - 5.1.2 **Phase II Section I LCRS** - System to remove the leachate from within the Phase II Section I disposal area.
  - 5.1.3 **Phase II Section II LCRS** - System to remove the leachate from within the Phase II Section II disposal area.

### 6. Recording and Adjusting Leachate Levels

- 6.1 **Phase I** - Leachate levels within Phase I can be lowered by adjusting the pumping rate from Manhole Number 8. Leachate levels can only be lowered to the invert of the perimeter leachate

collection pipe. The lowest elevation of the pipe is located on the south side of the disposal area at approximately Elevation 72.8.

**Leachate Meter Reading** - The amount of leachate generated from the Phase I area is read directly off of the MH-8 pump station flow meter.

- 6.2 **Phase II Section I** - Leachate levels inside Phase II Section I are controlled by pressure transducers attached to the LCRS pumps. Once the liquid level rises above a predetermined elevation, the pumps are automatically activated and the liquid is pumped to the existing leachate storage tanks.

**Leachate Meter Reading** - The leachate collection and detection pumps have independent flow meters to measure the amount of leachate pumped to the leachate storage tanks. **Daily readings from the two flow meters will be recorded.**

- 6.3 **Phase II Section II** - Liquid levels inside Phase II Section II are controlled by pressure transducers attached to the LCRS pumps. Once the liquid level rises above a predetermined elevation, the pumps are automatically activated and the liquid is pumped to the leachate collection sideslope risers located along the western side of the south portion of Phase II Section II. The sideslope risers are extensions of the LCRS pipes for Phase II Section II which are connected to the LCRS pipes located within Phase II Section I. Leachate flows via gravity to the leachate collection sump located in Phase II Section I. From the Phase II Section I sump the leachate is pumped into the existing above ground leachate storage tanks.

**Leachate Meter Reading** - Independent flow meters from the collection and detection discharge lines are located on the concrete pad next to the control panel for Phase II Section II. The flow meters track the amount of leachate collected from the collection and detection systems. **Daily readings from the two flow meters will be recorded when waste is being placed within the area.**

- 6.4 **Leachate Tank Leveling** - Liquid levels in the two leachate storage tanks are monitored by County staff, either visually or by reading the liquid level readouts on the side of the tanks, to estimate available storage and prevent overflow of the tanks. To adjust the level of leachate in the tanks, liquid can be transferred from one tank to another or additional truckloads can be sent offsite for disposal.

## 7. Recording Leachate Quantities

- 7.1 Leachate flowmeters, leachate hauled off-site, and precipitation will be monitored and quantities recorded daily, by County staff, in the Monthly Leachate Water Balance Form provided in Attachment A of this SOP. Leachate readings will be input daily into the form which will be finalized monthly and sent to the Florida Department of Environmental Protection (FDEP) on a quarterly basis, if requested.

7.1.1 To determine the amount of leachate generated from Phase I, Phase II Section I, and Phase II Section II, daily readings from the flow meters will be conducted by County staff, rain gauge readings will be recorded daily, and the amount of leachate transported from the leachate storage tanks will be recorded. Information will be input into the Monthly Leachate Water Balance Form as provided in Attachment A.

**7.1.2 Leachate Truck Loading Station** - Leachate can be pumped from either of the two

storage tanks. Flow meters measure flow in the forcemain leading from the tanks to the truck loading station. The amount of leachate hauled off-site will be recorded daily by County staff. The amount hauled off-site versus the amount pumped into the tanks will be recorded as storage. Any differences in storage can be accounted for as precipitation or evaporation. Leachate generation data and the amounts hauled for treatment are recorded daily by County staff on the Leachate Water Balance Form.

- 7.1.3 Procedures for Comparing Precipitation with Leachate Generation Rates** - A rain gauge is located onsite, operated, and maintained by County staff to record precipitation at the landfill. Precipitation records are included with the operating record and are maintained and used to compare with leachate generation rates. Rain data, in excess of one tenth of an inch, is recorded daily in the operating record.

## 8. Operation and Maintenance of Leachate Collection and Removal System and Groundwater Control System

8.1 In accordance with Rule 62-701.500(2)j, FAC this SOP and the Hardee County Landfill Operation Plan identifies maintaining and cleaning the LCRS at the landfill. The LCRS will be cleaned and maintained, as necessary, through the cleanout riser pipes. The LCRS pipes will be inspected in accordance with Rule 62-701.500(8)(h), FAC.

8.2 The LCRS pipes will be cleaned by flushing and/or be inspected by video recording in accordance with Rule 62-701.500(8)(h), FAC at least once every five years during the 20-year Operation Permit period.

**8.2.1 Phase I LCRS** - Leachate within Phase I is collected in a perimeter subsurface collection pipe surrounding the waste materials. The pipes are accessible through a series of manholes designated MH 1, 2, 3, 4, 8 and 9. Manhole 8 is the main leachate collection pump station having a nominal capacity of approximately 130 gpm. This duplex pump station is operated by float control. The lids on Manholes 5, 6, and 7 were covered with a concrete cap during the Phase I Closure project per Permit Number 38414-012-SF/01. Leachate in the collection system drains to Manhole No. 8 where it is pumped to one of the leachate storage tanks. County staff are responsible for pumping the leachate tanks on a daily basis and transport the leachate to the City of Wauchula Municipal Wastewater Treatment Plant. This pump station is operated by float control using the following five floats:

- Lead pump on (10 feet), lag pump on (11 feet), high level alarm (13.5 feet), and low level shut-off both pumps (6 feet).

A control panel, located immediately adjacent to the pump station, has controls to activate the pumps. The pumps can be activated for manual or automatic operations. Meters on the control panel record the amount of leachate pumped from the Phase I area into the storage tanks. The pump station discharges into a 4-inch force main flowing to the leachate storage tanks. For additional reliability, the submersible leachate pump station is also furnished with an emergency pump out connection to allow for removal of leachate directly from the lift station should the storage tanks not be operational.

**8.2.2 Phase II Section I LCRS** - Leachate within Phase II Section I is collected within three 8-inch HDPE leachate collection pipes that drain via gravity to a sump located at the east end of

the disposal area. Two sideslope riser pumps collect and discharge leachate to the leachate storage tanks. One pump collects from the detection system and one pump collects from the collection system. Both pumping systems are controlled by independent control panels. The control panels have automatic on/off controls for the pumps. Independent flow meters track the amount of leachate collected from the collection and detection systems.

The LCRS pumps are controlled by submersible pressure transducers attached to the outside body of the pumps for ease of cleaning/replacement to control the liquid level in the sump with the following settings:

- The pressure transducers are attached to the primary and secondary leachate pumps at approximately Elevation 79.5.
  - Primary pump will turn on at Elevation 82.0 (2.5 feet liquid height).
  - Primary pump will turn off at Elevation 80.0 (0.5 feet liquid height)
  - Secondary pump will turn on at Elevation 82.0 (2.5 feet liquid height).
  - Secondary pump will turn off at Elevation 80.0 (0.5 feet liquid height).

The main leachate collection header pipe is located along the eastern and southern toe of slope in a manner so that access is provided to insert a TV camera and flushing equipment.

The leachate collection and detection pumps are accessible from the surface and are equipped so the pumps can be removed for repairs or replacement. In addition, with the pumps removed, the portion of the pipe forming the intake section in the sump can have a TV camera and flushing equipment inserted.

**8.2.3 Phase II Section II LCRS** - Leachate within Phase II Section II is collected within two 8-inch and one 10-inch HDPE leachate collection pipes connected to a 12-inch HDPE collection header located in the center portion of the cell that drains via gravity to the leachate collection/detection sump located in the western central portion of Phase II Section II. The leachate sump is equipped with submersible pumps that discharge the leachate from the sump out of the cell. From the point of discharge, the leachate travels south in a pressure pipeline into the three leachate collection sideslope risers located along the western side of the south portion of the Phase II Section II which are connected to the LCRS pipes located within Phase II Section I. Leachate flows via gravity to the existing leachate sump and collection/detection pumps located within Phase II Section I.

The LCRS pumps are controlled by submersible pressure transducers attached to the outside body of the pumps for ease of cleaning/replacement to control the liquid level in the sump with the following settings:

- The pressure transducer is attached to the primary leachate pump at approximately Elevation 79.0.
  - Primary pump will turn on at Elevation 81.5 (2.5 feet liquid height).
  - Primary pump will turn off at Elevation 79.5 (0.5 feet liquid height)

- The pressure transducer is attached to the secondary leachate pump at approximately Elevation 77.75.
  - Secondary pump will turn on at Elevation 80.25 (2.5 feet liquid height).
  - Secondary pump will turn off at Elevation 78.25 (0.5 feet liquid height).

From the Phase II Section I disposal area sump the leachate is pumped into the existing above ground leachate storage tanks.

The main leachate collection header pipe is located east/west between the north and center portions and slope to the west in a manner so that access is provided to insert a TV camera and flushing equipment.

The leachate collection and detection pumps are accessible from the surface and are equipped so the pumps can be removed for repairs or replacement. In addition, with the pumps removed, the portion of the pipe forming the intake section in the sump can have a TV camera and flushing equipment inserted.

**Temporary Sideslope Berms** - To reduce the amount of surface water runoff into Phase II Section II center and northern portions (and generating additional leachate), County staff will construct temporary sideslope berms along the western Phase I sideslope during operations as needed. The temporary sideslope berms will be active in nature to accommodate fill sequencing and reduce surface water runoff into active waste filling to the extent practical.

The temporary sideslope berms will direct the southern half of the western Phase I sideslope surface water runoff into the Phase II Section II northern portion (which will be covered with a rain tarp while waste filling is not occurring) when filling in the center portion. This surface water runoff will be pumped from the northern portion area into the perimeter stormwater management system.

The temporary sideslope berms created along the northern half of the western Phase I sideslope will direct the surface water runoff into the northern perimeter stormwater management system swale while filling in the northern portion. This will reduce the amount of surface water runoff entering the northern portion and generating additional leachate.

**8.2.4 Leachate Tanks** - The overflow protection system of the tanks is provided by ultra-sonic liquid level indicators, located on the top of each of the tank, that provide continual monitoring of the liquid levels. The ultra-sonic level indicators provide both overflow protection and low liquid level monitoring to protect the pumps at the truck loading area. As liquid levels rise in the tank above a pre-determined height, the ultra-sonic level indicators send a signal to an alarm (an audible and flashing light) on the control panel located at the lift station. A signal is also sent to the control panel at the lift station to shut-off the pump(s). When leachate is pumped from the tanks to the truck loading area, the ultra-sonic level indicators monitor the liquid level in the tanks and shut off the pumps at the truck loading area should the level drop below a pre-determined level. This prevents the pumps from running dry and possibly overheating.

As a back-up contingency plan (only used should signal alarms and pump shut-offs fail) the back-up overflow protection system for the tanks are as follows:

- Tank 1 is filled by the pump station located at MH-8. If the liquid level rises above the overflow pipe in Tank 1, the flow is diverted to Tank 2.
- As Tank 2 fills and equalizes with Tank 1, the two tanks fill simultaneously.
- Should both tanks continue to fill, each tank has a final overflow pipe, which allows any overflow to be captured in the containment area for each individual tank. Tanker trucks are used to transport leachate off-site for disposal. The tanker trucks pull around to the western side of the storage tanks and park on top of a concrete lined unloading area. The unloading area is designed to collect accidental spills and convey the spill back into the lift station. After parking the truck, the driver has the option of selecting which tank to begin draining. The control panel, located immediately adjacent to the truck unloading area, allows the truck driver to control the pump while a meter readout allows the driver to monitor the amount of leachate transferred to the truck. Once the truck is full, the leachate is hauled offsite for disposal.

**8.2.5 Leachate List Station or Tank Repairs** - Leachate may be pumped and stored into either of two leachate storage tanks allowing for maintenance on one tank while the other remains in service. Leachate may also be pumped from either storage tank or directly into tanker trucks for transport to the City of Wauchula wastewater treatment plant. Should this plant become unavailable to the County, arrangements will be made to take the leachate to another treatment facility within seven (7) days.

**8.2.6 Lift Station Inspections** - As part of weekly responsibilities of County staff, the condition of the tanks will be visually inspected for corrosion, leaks, structural damage, loose or broken equipment, for leachate in the secondary containment area of the tanks, integrity of the cathodic protection system, overflow protection system and overflow control piping (located near the top of the tanks).

**Inspection of the interior of the tanks will be performed whenever the tank is drained or at a minimum of every three years.** If the inspection reveals a tank or equipment deficiency, leak, or any other deficiency which could result in the failure of the tank to contain the leachate, then remedial actions will be taken to correct the deficiency immediately.

**8.2.7 Groundwater Interceptor System** - The Phase II Section I and the southern portion of Phase II Section II have a series of underground groundwater collection pipes to intercept and collect groundwater variances above the seasonal high groundwater elevation. The groundwater interceptor system pump station, designated as Manhole Number 10, is located to the southeast of Phase II Section I. There are two skid-mounted duplex pumps located on top of the concrete pad surrounding the wet well. The groundwater interceptor system pumps are operated by float control using the following five floats:

- Lead pump on (Elevation 77.5); Lag pump on (Elevation 78.0); Pump(s) off (Elevation 76.9); High level alarm (Elevation 78.5); Low level shut-off (Elevation 76.9).

A control panel located immediately adjacent to the groundwater interceptor system pump station contains the controls to activate the groundwater interceptor pumps. The groundwater pumps may be activated manually or by automatic operations. To activate the pumps manually, the control panel would be opened and the switch which initiates the required pump(s) would be turned and held to the “manual” position. The switch would be held in the “manual” position during the time the pump(s) was required to operate. Once the switch was released the pump(s) would shut down. The switch would be manually manipulated in this manner to activate the pump(s) when needed. The groundwater interceptor system pump station discharges through a 6-inch ductile iron pipe into the adjacent stormwater swale.

Should the groundwater interceptor pumps in the wet well be rendered inoperable, the hatch would be opened on the top of the wet well and a submersible trash pump (or similar type pump) would be lowered into the wet well for temporary operations. The temporary pump would be operated as needed and the groundwater pumped from the wet well would be discharged into the rip rap lined discharge point located adjacent to the wet well as during normal operations.

## 9. Procedures for Managing Leachate upon Regulation Changes

- 9.1 In accordance with Rule 62-701.500(8)c, leachate may be discharged to an off-site treatment plant. The landfill operator is responsible for having a written contract or agreement with the off-site treatment plant to discharge leachate to the plant. If at any time the leachate is determined to be hazardous, it will be managed in accordance with Rule 62-730, FAC.

## 10. Procedures for Managing Leachate if Regulated as Hazardous Waste

- 10.1 If at any time the leachate is determined to be hazardous, it will be managed in accordance with Rule 62-730, FAC. If the leachate analysis indicates a contaminant listed in 40 CFR Part 261.24 exceeds the regulatory level, a monthly sampling of leachate will be instituted and FDEP notified. If in any three consecutive months no listed contaminant is found to exceed the regulatory limit, the monthly sampling will be discontinued and the routine sampling schedule will be implemented.

## 11. Off-Site Leachate Treatment Agreements

- 11.1 An agreement between the County and the City of Wauchula (City) provides for off-site treatment of leachate. The County retains the City to provide treatment and disposal of leachate on an as-needed basis. The County is responsible for testing, reporting, and transportation of leachate to the City’s wastewater treatment plant.
- 11.2 If the City of Wauchula Waste Treatment Plant is unavailable then leachate can be diverted to the Vandolah and Wauchula Hills wastewater treatment facilities. Since these facilities are owned and operated by the County no agreements are necessary.


## 12. Contingency Treatment Plant Options

- 12.1 Should any or all the available treatment plants become unavailable to the County, arrangements will be made to take the leachate to another treatment facility within seven (7) days.

### 13. References

1. Hardee County Landfill Operation Plan, June 28, 2013 and updated September 6, 2019 by SCS Engineers.
2. Hardee County Landfill 5-Year Submittal Report, September 6, 2019 prepared by SCS Engineers.





ATTACHMENT A  
Monthly Leachate Water Balance Form

**Hardee County Landfill Monthly Leachate Water Balance**

Month

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Day	Phase II Section II North/Center Collection Reading (gal)	Phase II Section II North/Center Detection Reading (gal)	Total Leachate Generated North/Center (gal)	Phase II Section I Collection Reading (gal)	Phase II Section I Detection Reading (gal)	Phase II Section I Collection Leachate Generated (gal)	Phase II Section I Leachate Detection Generated (gal)	Total Leachate Phase II Section II and Phase II Section I Generated (gal)	Phase I (Pumped From MH-8) (gal)	Total Leachate Added to Tanks (gal)	Rainfall (inches)	Rainfall Added to Tanks (gal)	Total Leachate and Rainfall Added to Tanks (gal)	Previous Day Liquid Remaining in Tanks (gal)	Previous Day Liquid Remaining in Tanks and Rainfall Added (gal)	Liquid Hauled From Tanks (gal)	Total Liquid Balance in Tanks End of Day (gal)
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Next Months Beginning Storage =