Leachate Management Plan

Hillsborough Southeast County Landfill
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LEACHATE MANAGEMENT PLAN
PHASES I-VI AND THE
CAPACITY EXPANSION AREA
SOUTHEAST COUNTY LANDFILL
HILLSBOROUGH COUNTY, FLORIDA

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1.0 LEACHATE MANAGEMENT

The Hillsborough County Southeast County Facility includes the Southeast County Landfill (SCLF), which is permitted by the Florida Department of Environmental Protection (FDEP) as a Class I landfill for Phases I-VI and the Capacity Expansion Area (CEA). This Leachate Management Plan (LMP) includes Phases I-VI and Sections 7, 8, and 9 of the CEA.

This plan will give the SCLF employees a general understanding of the requirements for managing the leachate generated from the Class I landfill operations within the Phases I-VI and CEA disposal areas. As defined in Rule 62-701.200(59), FAC, leachate is liquid that has passed through or emerged from solid waste and may contain soluble, suspended, or miscible (mixed) materials. Leachate must be contained and kept separate from any groundwater or surface waters.

2.0 LEACHATE GENERATION

One of the goals of the landfill design and daily operation is to minimize leachate production from the landfill to reduce the cost associated with leachate treatment and thus minimize the potential environmental contamination risks. The methods described in this section can be used separately or simultaneously to achieve leachate reduction.

Leachate is generated as water passes through solid waste or as liquids drain from solid waste materials. Water may be from stormwater infiltration, irrigation, groundwater, or other sources added to the waste material. Liquids from the solid waste include moisture from food or waste products and fluids disposed of in the waste. Water and liquids that drain through or from the waste materials eventually drain via gravity into the collection systems at the bottom of the Class I disposal areas. Once collected, the leachate is pumped to the on-site Leachate Treatment and Reclamation Facility (LTRF) for treatment or hauled off site for treatment at a wastewater treatment facility.

In addition, leachate is generated in the form of condensate from the collection of landfill gas from Phases I-VI and the CEA. Condensate is managed by several methods, including drainage back to the landfill or collection in sumps at low areas. While landfill gas condensate collection and transmission are not addressed in the leachate management plan, condensate management is addressed within the Gas Collection and Control System Plan for the SCLF referenced as part of the SCLF Title V operating permit. This plan should be referenced for details regarding condensate management.

3.0 LEACHATE COLLECTION SYSTEMS

The leachate collection system for Phases I-VI and the leachate collection and detection systems for the CEA are depicted in Figure 3-1 and Figure 3-2, respectively. Additional descriptions of these systems are provided in the following sections.

3.1 PHASES I-VI LEACHATE COLLECTION

Phases I-VI of the Southeast County Landfill Facility were constructed directly above a waste clay settling area for a former phosphate mine known as *Lonesome Phosphate Mine* or *Boyette Mine.* The Phases I-VI landfill is approximately 162.4 acres. The settling area, also known as *Settling Area No. 1*, was built on natural ground with a perimeter dike constructed of sand borrowed from surrounding areas. As part of the phosphate mining operations, waste phosphatic clay and other soils were washed and phosphate minerals removed from the surrounding soils.

The washed waste phosphatic clays and soils were pumped to the settling areas and allowed to settle to the bottom of the settling ponds. The low-permeability waste phosphatic clays now form the bottom containment liner for the disposal of waste in the Phase I-VI area. A single layer of 36-mil chlorosulfonated polyethylene (CSPE) or high-density polyethylene (HDPE) liner, depending on the phase, is tied into the waste phosphatic clay layer as a side containment liner barrier.

The leachate collection and removal system for Phases I-VI consists of crushed granite rock and tire-chip-filled trenches, 8-inch diameter perforated Schedule 80 polyvinyl chloride (PVC) pipes in granite rock-filled trenches, and 8-inch diameter perforated HDPE pipes in granite rock-filled trenches. The gravel- and tire-filled trenches drain to the 8-inch pipes which then drain to Pump Station B (PS-B) located in the Phase VI disposal area. PS-B was designed to be the ultimate low point for the entire footprint of Phases I-VI after final placement of waste material and loading of the waste phosphatic clays. As the waste phosphatic clays are loaded, the clays settle. Excess water from within the clays is squeezed out during the loading of the clays and enters the leachate collection system. During interim operating conditions, when a portion of the bottom liner of Phases I-VI may not drain to PS-B, Temporary Pump Station 6 (TPS-6) in Phase IV is operated to collect leachate that does not flow to PS-B.

3.2 CAPACITY EXPANSION AREA LEACHATE COLLECTION

3.2.1 Section 7

3.2.1.1 Leachate Collection System

Section 7 of the CEA landfill is approximately 12.5 acres. The dimensions of Section 7 are approximately 750 feet long (southwest to northeast) and 800 feet wide (northwest to southeast). Section 7 was designed with a double-liner system—one for leachate collection on the primary liner and the other for detection (secondary liner) of any leachate that may leak through the

collection liner. A 300-mil bi-planar geocomposite was installed on the top of each of the 60-mil HDPE geomembranes to convey leachate toward collection trenches. Twelve inches of drainage sand and 12 inches of chipped tires were placed above the primary collection system to provide additional drainage collection and provide puncture protection of the underlying HDPE liners.

Leachate travels through the primary geocomposite and sand/tire-chip drainage layer and is collected in the leachate collection trench. This trench consists of 8-inch perforated HDPE leachate collection pipes and gravel wrapped in a geotextile to minimize migration of sand into the pipes. Leachate that collects in the trench flows to a collection header and then toward a collection sump in the southwest corner of Section 7. The sump was designed as the lowest point in Section 7 and was filled with gravel. A riser pipe was installed in the gravel fill of the sump and contains a submersible pump for leachate removal.

3.2.1.2 Leachate Detection System

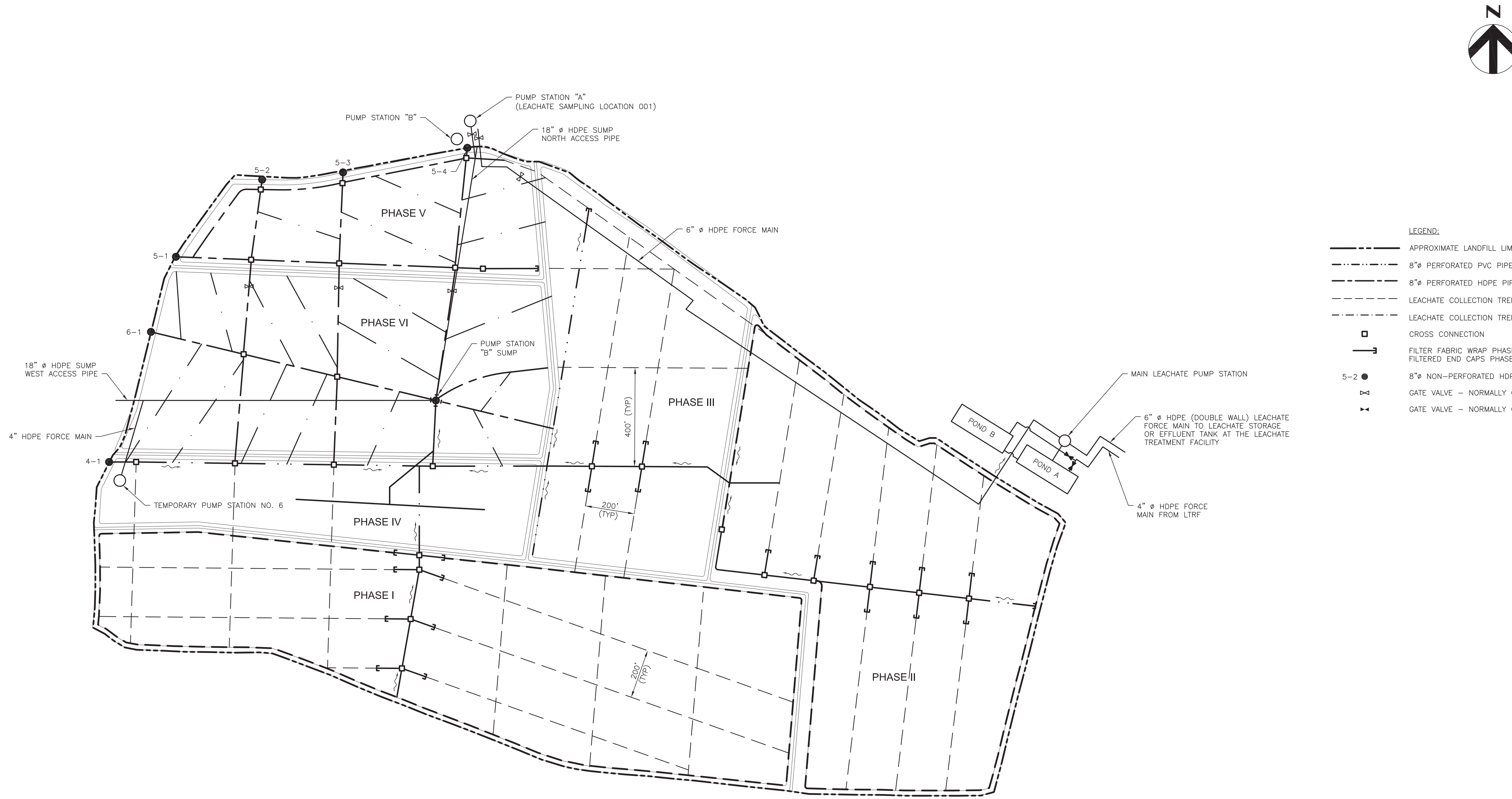
The leachate detection system of Section 7 consists of a bi-planar geocomposite between the primary and secondary geomembranes. The geocomposite drains leachate toward an 8-inch perforated HDPE pipe in a gravel-filled trench. The lateral pipes drain to a main header on the southwest end of Section 7. The main header drains to the low point of Section 7 containing a sump with gravel fill and a riser pipe. Leachate is removed from the Section 7 leachate detection system via the riser pipe using an above-grade pump.

During standard practices, the detection system is expected to collect a small volume of leachate. Leakage rates collected in the detection system will be used to monitor the performance of the collection system. The action leakage rate for the CEA is discussed in Section 9.3.3.

3.2.2 Section 8

3.2.2.1 Leachate Collection System

Section 8 of the CEA is approximately 6.8 acres. The dimensions of Section 8 are approximately 500 feet long (southwest to northeast) and 660 feet wide (northwest to southeast). Section 8 was designed with a double-liner system—one for leachate collection (primary liner) and the other (secondary liner) for detection of any leachate that may leak through the collection liner. A 300-mil tri-planar geocomposite was installed on the top of each of the 60-mil HDPE geomembranes to convey leachate toward leachate collection trenches. Twelve inches of drainage sand and 12 inches of chipped tires were placed above the primary collection system to provide additional drainage collection and provide puncture protection of the underlying HDPE liners.



LEGEND:

- APPROXIMATE LANDFILL LIMITS
- 8"ø PERFORATED PVC PIPE AND TRENCH W/ GRAVEL
- 8"ø PERFORATED HDPE PIPE AND TRENCH W/ GRAVEL
- LEACHATE COLLECTION TRENCH (GRAVEL)
- LEACHATE COLLECTION TRENCH (CHIPPED TIRES)
- CROSS CONNECTION
- FILTER FABRIC WRAP PHASE I-IV AND PERFORATED FILTERED END CAPS PHASE V-VI
- 5-2 ● 8"ø NON-PERFORATED HDPE PIPE CLEANOUT
- GATE VALVE - NORMALLY OPEN
- GATE VALVE - NORMALLY CLOSED

200 100 0 200 400

SCALE: 1"=200'

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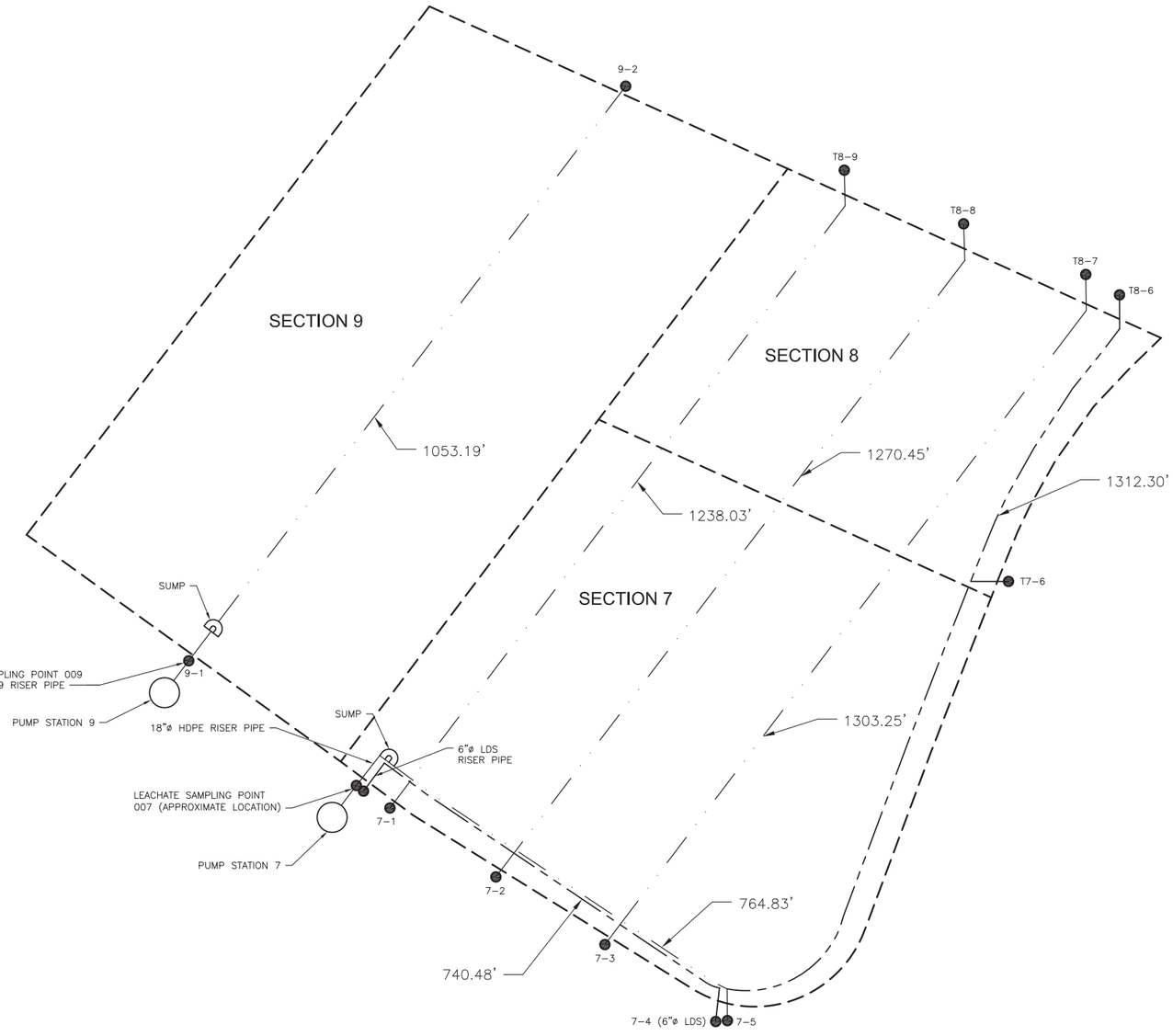
PHASES I-VI
LEACHATE COLLECTION SYSTEM

HILLS BOROUGH COUNTY, FLORIDA

FIGURE 3-1



CAPACITY EXPANSION AREA
LEACHATE COLLECTION SYSTEM

HILLS BOROUGH COUNTY, FLORIDA

FIGURE 3-2

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The design of Section 8 included connecting the leachate collection and detection system components to Section 7. Therefore, leachate travels through the upper geocomposite and sand/tire drainage layer and is collected in the leachate collection trenches in Section 8. These trenches consist of an 8-inch perforated HDPE leachate collection pipe and several feet of gravel wrapped in woven geotextile. Leachate that collects in the Section 8 trenches continues to flow though Section 7 trenches. Once in the Section 7 collection system, leachate drains to the sump in the southwest corner of Section 7.

3.2.2.2 Leachate Detection System

The leachate detection system of Section 8 consists of a tri-planar geocomposite between the primary and secondary geomembranes. The Section 8 tri-planar geocomposite was connected to the Section 7 bi-planar geocomposite. The geocomposite drains leachate to 8-inch perforated HDPE pipes in gravel filled trenches. The trenches flow through Sections 7 and 8. The lateral pipes drain to a main header on the southwest end of Section 7. The main header drains to the leachate sumps in the southwest corner of Section 7 as described in previous sections.

During standard practices the detection system should collect a small amount of leachate. Leakage rates collected in the Section 8 detection system cannot be measured independently from Section 7; however, since each system is connected, the total leakage measured in the Section 7 sump will be used to monitor the performance of the Sections 7 and 8 leachate detection systems.

3.2.3 Section 9

3.2.3.1 Leachate Collection System

Section 9 of the CEA landfill is approximately 15.2 acres. Section 9 is approximately 980 feet long (southwest to northeast) and 580 feet wide (northwest to southeast). The primary leachate collection system is composed of a combination of synthetic materials and natural granular materials. A geocomposite consisting of an HDPE geonet with the top and bottom sides bonded to a geotextile is directly above the primary 60-mil HDPE geomembrane. The geocomposite is overlain by a 12-inch-thick natural granular (sand) drainage layer and a 12-inch-thick chipped-tire drainage layer.

Leachate flows by gravity to a central leachate collection trench that conveys the leachate to the leachate collection sump on the south side of Section 9. The leachate collection pipe is a perforated 8-inch-diameter SDR 11 HDPE pipe surrounded by gravel and geotextile. From the sumps, leachate is pumped via a 6-inch SDR 11 HDPE forcemain to the LTRF located northeast of Sections 7 and 8.

3.2.3.2 Leachate Detection System

The leachate detection system for Section 9 includes a geocomposite consisting of a HDPE geonet with the top and bottom sides bonded to a geotextile installed between the primary and secondary geomembranes. Leachate entering the secondary LCRS flows by gravity through the geonet to the leak-detection trench. The trench, constructed at a slope of approximately 0.75%, conveys leachate to a leachate-detection sump on the south side of Section 9. From the sump, leachate is pumped via a 6-inch SDR 11 HDPE forcemain to the LTRF.

During standard practices, the detection system is expected to collect a small volume of leachate. Leakage rates collected in the detection system will be used to monitor the performance of the collection system. The action leakage rate for the CEA is discussed in Section 9.3.3.

4.0 LEACHATE TRANSMISSION

A schematic of the leachate management system at the SCLF is shown in Figure 4-1. The following sections provide additional details for the transmission components of the leachate management system at the SCLF.

4.1 PHASES I-VI

4.1.1 Pump Station A (PS-A)

PS-A consists of an 8-foot inside-diameter below-grade concrete sump with a single submersible pump. From PS-A, leachate is pumped to the Main Leachate Pump Station (MLPS) via force main. The pump operation is set with the "on" float at 42 inches from the sump bottom and the "off" float at 18 inches from the sump bottom.

If a high-level condition occurs, the PS-A sump control panel will shut down Pump Station B (PS-B). It will also transmit a signal, via a transceiver, with the sump condition to the control computer in the LTRF, the effluent/leachate storage tank (T6), and the landfill administration office located at the scalehouse at the entrance of the SCLF. If PS-A will be inoperable for more than 8 hours, leachate from PS-B will be pumped through the bypass line directly to the MLPS.

Operational procedures and valve settings including a representational schematic of the pump and piping system for PS-A and PS-B are provided in Appendix B.

4.1.2 Pump Station B (PS-B)

PS-B sump (located in Phase VI) is the primary leachate collection point for Phases I-VI. Upon consolidation of the phosphatic clay liner, the low point for the final collection and removal of leachate within the landfill is projected to be at the PS-B sump location. The LCRS for the landfill was designed to drain to the PS-B sump.

PS-B sump consists of an 8-foot square (inside dimension) below-grade concrete vault. The vault has two 18-inch diameter HDPE horizontal access pipes, the main access pipe leading to PS-A, and an alternate access pipe leading toward the western perimeter of the landfill between cleanouts 4-1 and 6-1.

The primary pump used to remove leachate from the PS-B sump is a Godwin vacuum-assisted pump. The self-priming pump has a capacity of 150 gallons per minute (GPM). If the primary pump fails, the Hillsborough County, Public Utilities Department, Solid Waste Management Group (SWMG) has stored a Godwin vacuum-assisted diesel pump that may be used as backup. PS-B sump is equipped with a level indicator located at the control panel near PS-A, and the SWMG monitors the liquid level daily to ensure that the levels noted below are maintained. Maintaining the operation of PS-B as proposed will provide reasonable assurance that Phases I-

VI will maintain a leachate head over the liner of 12 inches or less during routine landfill operation.

PS-B pumps leachate to PS-A via a vacuum-assisted pump. The bubbler leveling system with an "on" sensor is set at 24 inches above the sump bottom and the "off" sensor is set at 15 inches from the bottom. The settings provide for free flow of leachate into the vault from the surrounding Phase I-VI disposal areas, thereby maximizing the leachate collection efficiency.

Operational procedures and valve settings including a representational schematic of the pump and piping system for PS-A and PS-B are provided in Appendix B.

4.1.3 Temporary Pump Station 6 (TPS-6)

TPS-6 consists of an above-ground pump station to remove leachate from Phase IV from the 8-inch diameter header line connected to Cleanout 4-1 as shown in Figure 3-1. The leachate is removed via a 3-inch diameter HDPE suction line that was inserted 1,100 feet into the 8-inch header. TPS-6 pumps leachate to the PS-B sump through the west 18-inch diameter access pipe via a 4-inch diameter HDPE force main. TPS-6 operates in tandem with PS-B via radio telemetry.

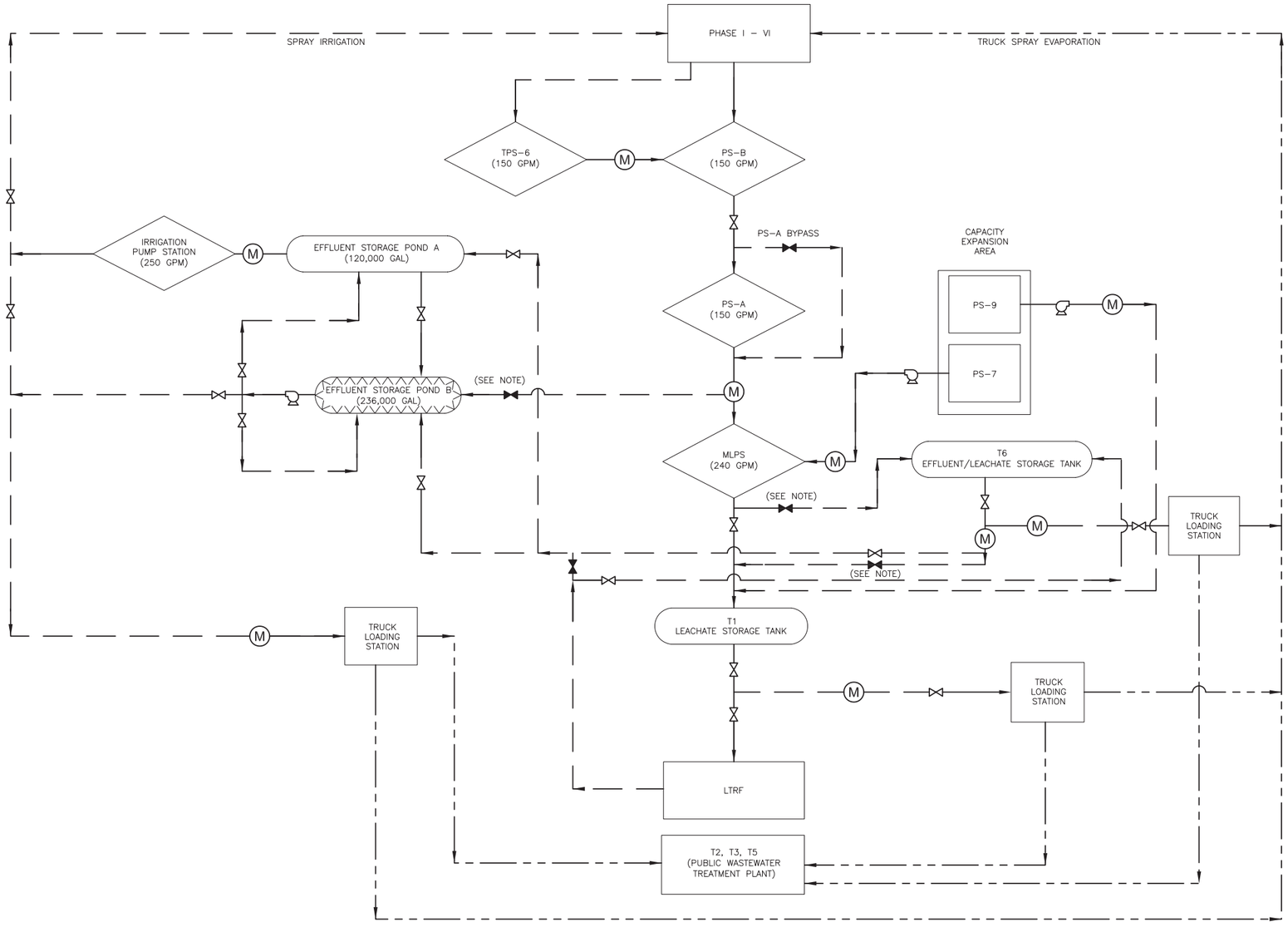
The primary pump at TPS-6 is a self-priming pump with a minimum capacity of 150 gpm. If the primary pump fails, the SWMG can use the stored vacuum-assisted diesel pump as backup or use the reserve equipment agreement to bring a pump on site. The SWMG monitors the flow daily to ensure that the levels noted above are maintained. Maintaining the operation of TPS-6 will provide reasonable assurance that leachate storage within Phases IV and VI is minimized.

Operational procedures and valve settings including a representational schematic of the pump and piping system for TPS-6 are provided in Appendix B.

4.2 CAPACITY EXPANSION AREA

4.2.1 Section 7 – Pump Station 7 (PS-7)

The leachate collection and leachate detection system piping for Sections 7 and 8 drain to sumps in the southwest corner of Section 7 as shown in Figure 3-2. The leachate detection sump is pumped to the leachate collection sump by an above-grade pump located at PS-7. The leachate collection sump pumps leachate using a submersible pump in the sump to the MLPS via an underground force main.



NOTE:

VALVE NORMALLY CLOSED AND SHOULD ONLY BE OPENED UNDER THE SUPERVISION OF THE SITE SUPERVISOR.

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REVISED JUNE 2013

LEACHATE MANAGEMENT SYSTEM SCHEMATIC

HILLS BOROUGH COUNTY, FLORIDA

FIGURE 4-1

C:\pwworking\tpa\d0432229\Figure 4-1.dwg, Figure 4-1, 5/9/2013 11:13:41 AM, lrodrigu

There are separate pumps for the leachate collection (submersible pump) and detection (above grade pump) sideslope risers. The levels in each sump are controlled with pressure transducers at the bottom of the riser pipes. These transducers are programmed for a high-level alarm at 48 inches, pump on at 24 inches, and pump off at 12 inches. All elevations are from the bottom of the Section 7 sump. Flow measurements are taken using readings from magnetic flow meters on each discharge line. Separate sampling ball valves allow separate leachate samples to be taken from either the collection or detection sumps.

Operational procedures and valve settings including a representational schematic of the pump and piping system for Sections 7 and 8 are provided in Appendix B.

4.2.2 Section 8

Section 8 was constructed by connecting the leachate collection and detection systems to the Section 7 systems. No pumping systems are included in the Section 8 design. Section 8 uses the sumps and pumps for Section 7 to pump leachate to the MLPS.

4.2.3 Section 9 – Pump Station 9 (PS-9)

The Section 9 area includes sideslope riser pipes—two for the primary leachate collection and one for the leachate detection systems—with submersible pumps. All the pumps for the Section 9 area are controlled by a separate control panel located on the south side of Section 9. Leachate is conveyed by a buried forcemain which connects to the existing forcemain on the south side of Section 7. The forcemain then continues to the LTRF northeast of the CEA.

The Section 9 pumps are controlled by a bubbler level sensing system at the PS-9 control panel. The standard practice bubbler settings for the leachate collection pumps from the bottom of the sump are high-level alarm at 36 inches, lag pump on at 33 inches, lead pump on at 27 inches, and low level alarm at six inches. The standard practice bubbler settings for the detection pump from the bottom of the sump are high-level alarm at 36 inches, pump on at 27 inches, and pump off at 21 inches.

In addition, the Section 9 pumps are deactivated when the leachate storage tank (T1) senses a high-level alarm.

Operational procedures and valve settings including a representational schematic of the pump and piping system for Section 9 are provided in Appendix B.

4.3 MAIN LEACHATE PUMP STATION (MLPS)

The MLPS consists of a 7-foot-square (inside dimension) below-grade concrete sump with dual submersible pumps (i.e., one operating and one stand-by). Each submersible pump is rated to pump at a maximum discharge rate of 240 gpm. The operating pump is set for a 24-hour operation cycle with the "on" float at 48 inches from the sump bottom and the "off' float at 24 inches from the sump bottom.

If a high-level condition occurs at the MLPS sump, the control panel will shut down PS-7, PS-A and PS-B. It will also transmit a signal, via a transceiver, with the sump condition to the control computer in the LTRF effluent/leachate storage tank (T6) and the administration office. Maintenance and inspection of the MLPS pump are described in Section 10.0.

From the MLPS, leachate is pumped to the 575,000-gallon leachate storage tank (T1) or to the 575,000-gallon effluent/leachate storage tank (T6) [effluent/leachate storage tank (T6)—for emergency use only, as described in Section 7.0] at the LTRF.

Operational procedures and valve settings, including a representational schematic of the pump and piping system for the MLPS, are provided in Appendix B. In addition, Ponds A and B, discussed in more detail in Section 8.0, are included with the MLPS instruction sheets and schematic.

5.0 LEACHATE STORAGE TANK (T1)

Leachate from Phases I-VI and the CEA is currently stored in a 575,000-gallon maximum capacity glass-fused-to-steel aboveground raw leachate holding tank before being treated or hauled. The leachate level in the leachate storage tank (T1) is maintained to provide for the maximum storage capacity possible. The leachate storage tank (T1) is maintained with an average low level of six feet (as measured from the top of the tank) or 173,000 gallons (3 days' storage) to ensure that enough leachate is available for the LTRF to operate without interruptions. When the level in the leachate storage tank (T1) is below six feet, leachate hauling and spray evaporation will be temporarily reduced or stopped. Similarly, an action level is established for a high level of 11 feet (from top of tank) in the leachate storage tank (T1). A level of 11 feet provides a storage capacity in the leachate storage tank (T1) of 259,000 gallons (4 days' storage) to allow continuous operation of the landfill pump stations. When levels are above 11 feet, treatment, hauling, and/or spray evaporation will be increased.

If a high-level alarm condition occurs (at 16.5 feet) in the leachate storage tank (T1), the LTRF will continue to operate, and the MLPS, PS-9, PS-10, and the LTRF filtrate pumps will be shut down. A signal indicating the leachate storage tank (T1) condition will be sent to the control computer in the LTRF and the administration office. When a high-level alarm condition exists, additional hauling trucks will be used to transport the leachate to a (WWTP), thus lowering the leachate level in the tank.

Additional operational procedures and valve settings, including a representational schematic of the pump and piping system associated with the leachate storage tank (T1) and operation of the effluent/leachate storage tank (T6) discussed in Section 7.0, are provided in Appendix B.

5.1 T1 SECONDARY CONTAINMENT SYSTEM

The LTRF leachate tank system is located within a concrete containment area. The secondary containment area has two sumps for stormwater drainage with 6-inch diameter HDPE pipes. The gate valves from the HDPE pipes are normally closed, in the event of an uncontrolled release. The gate valves are occasionally opened to release stormwater from the impoundment as needed. The LTRF secondary containment area was designed to hold 110% of the volume of the largest storage tank in case of failure of the tanks. Therefore, the concrete flooring and containment walls will be inspected weekly for cracks or structural deficiencies as discussed in Section 5.3. Any cracks will be immediately sealed using flexible concrete grout. Any structural deficiencies will be identified and corrective action taken to repair the walls.

5.2 T1 LIQUID LEVEL MONITORING

The leachate storage tank (T1) contains an overflow pipe. The overflow pipe is installed outside of the storage tank, with the tank sidewall penetration within 30 inches of the top of the sidewall of the tank. The tank is equipped with liquid level indicators that are float-operated with a direct readout. The level gauge boards are mounted in a highly visible location on the exterior of the

tank. A visual and audible alarm (a light and horn) is located on the gauge boards to alert staff to a potential problem before overflow. The tank level is recorded daily on the leachate reporting forms. An example form is provided in Appendix A.

5.3 T1 EXTERIOR AND INTERIOR INSPECTIONS

The following describes the inspections of the leachate storage tank (T1) and procedures to be followed after the inspections:

- Overfill Prevention System: The overfill prevention system components will be inspected weekly. These components include level sensors, gauges, high-level alarm, and automatic shutoff controls.

- Tank Exterior: The exterior of the tanks and the secondary containment system will be inspected weekly for adequacy of the impressed current cathodic protection system, leaks, corrosion, and maintenance deficiencies. The control panel for the impressed current cathodic protection system (located on the outside of the secondary containment walls next to the truck loading station) will be inspected to ensure that it is working properly. In addition, the inspection includes evaluating structural damage to the tank, damage to the coating system, loose connections, corrosion, visible leaks, and maintenance deficiencies. The inspector will also look for any structural damage to the concrete slab, peeling of the paint system, and visible leaks.

- Tank Interior: The interior of the tanks will be inspected whenever the tanks are drained or at least every three years. The inspector will look for any damage to the interior coating system, structural damage, cracking of the tank, visible leaks, and any accumulation of sludge.

- Procedures for Corrective Actions: If inspections reveal any deficiencies with the tank or the secondary containment system that could result in the system's failing to contain the leachate, the SWMG shall take immediate action to correct the situation by assessing the problem and coordinating the required actions. Failures or damage to the tanks will be repaired by the tank manufacturer or a designated contractor. The SWMG shall notify the manufacturer or designated contractor of the situation; the tank manufacturer or designated contractor will remediate the tanks and prepare a detailed damage-assessment report. FDEP will be notified in writing of the situation and of the proposed corrective action.

- Inspection Reports: Inspection reports and reports of any remedial action measures taken will be maintained at the SCLF and will be made available to FDEP upon request. The weekly inspection report form is provided in Appendix A. All reports will be maintained for the life of the tanks and the containment system.

6.0 LEACHATE TREATMENT AND RECLAMATION FACILITY (LTRF)

In December 1994, the SWMG constructed an on-site LTRF. The LTRF system and operation are described in detail in the *General Process and Operation Manual for the Powder Activated Carbon Treatment (PACT) system*, Volume III, prepared by Zimpro Environmental, Inc. dated March 1994.

Process tanks and equipment are maintained in accordance with *General Process and Operation Manual for the Powder Activated Carbon Treatment (PACT) PACT System*, dated March 1994.

The treatment system of the LTRF includes biological treatment components. The LTRF is operated according to the operation manual listed above provided by the manufacturer with the exception that the powder-activated carbon is no longer used. The maximum treatment capacity of the LTRF is 60,000 gallons per day.

After treatment, the leachate is pumped through a 4-inch-diameter single-walled HDPE pipe to the effluent storage pond (Pond A) or the effluent/leachate storage tank (T6) described in Section 7.0. The effluent from the LTRF must meet pre-treatment standards before being pumped to a tanker truck for transport to Hillsborough County's wastewater treatment facilities.

The primary process tank at the LTRF includes a skirt on the southeast quadrant at the top perimeter of the tank intended to minimize process foam from the tank from blowing outside the tank to the containment area. If the foam is found outside the tank in the containment area, the following cleaning process shall be followed.

1. Pressure wash the affected areas.

2. The wash water will be collected and placed in the leachate storage tank.

7.0 EFFLUENT/LEACHATE STORAGE TANK (T6)

The effluent/leachate storage tank (T6) is a welded steel aboveground tank with a maximum capacity of 575,000 gallons. The effluent/leachate storage tank (T6) receives treated leachate (effluent) from the LTRF and pumps effluent to the effluent storage pond (Pond A) or stores the effluent for transport to Hillsborough County's wastewater treatment facilities. If leachate must be stored in the effluent/leachate storage tank (T6) from the MLPS while the leachate storage tank (T1) is repaired or inspected, normal operations at the LTRF will stop. Once the leachate storage tank is repaired or inspected, the leachate stored in the effluent/leachate storage tank (T6) will be pumped back to the leachate storage tank (T1). The effluent/leachate storage tank (T6) will be cleaned of leachate before effluent storage resumes.

The following conditions and associated valve settings are provided on instruction sheets and a schematic in Appendix B.

1. Pump effluent from the LTRF to the effluent/leachate storage tank (T6) (standard practice).

2. Pump effluent from the effluent/leachate storage tank (T6) to Pond A (standard practice).

3. Pump leachate from the MLPS to the effluent/leachate storage tank (T6) (special condition).

4. Pump leachate from the effluent/leachate storage tank (T6) to the leachate storage tank (special condition).

7.1 T6 SECONDARY CONTAINMENT SYSTEM

The secondary containment system for the effluent/leachate storage tank (T6) can contain a minimum of 110% of the total volume of the tank. The effluent/leachate storage tank (T6) provides 575,000 gallons of maximum storage.

The secondary containment system consists of a 60-mil HDPE geomembrane lined basin. The tank is constructed at the bottom of the basin on a reinforced concrete pad and surrounded by a 6-inch thick reinforced concrete walkway. The lined basin is connected at the walkway slab and runs up 3H:1V sideslopes where it is anchored at a 12-foot wide berm.

The precipitation collected in the containment area is pumped into the adjacent stormwater management system via a horizontal submersible pump and sideslope riser. The sideslope riser system includes an additional camlock connection to be used for emergency effluent/leachate removal using an additional pump. Any spilled leachate and/or effluent that accumulates in the secondary sump is pumped to the leachate storage tank (T1) via a suction line originating from the horizontal centrifugal pump at the loading pad. The centrifugal pump is equipped with valves

to operate in suction mode to remove any spilled effluent/leachate from the secondary sump. The submersible sump pump is manually operated to remove stormwater or used as an alternate for effluent/leachate removal.

Accumulated precipitation will be removed within 24 hours of observation. The precipitation will be pumped into the adjacent stormwater management system.

Accumulated liquid in the trench drain that is not precipitation resulting from a recent storm event will be treated as effluent and pumped into the effluent/leachate storage tank (T6).

7.2 T6 LIQUID LEVEL MONITORING

The effluent/leachate storage tank (T6) contains an 8-inch overflow pipe. The overflow pipe is installed outside of the effluent/leachate storage tank (T6) with the tank sidewall penetration within 30 inches of the top of the sidewall of the tank. The tank is equipped with liquid level indicators that are float operated with a direct readout. The level gauge boards are mounted in a highly visible location on the exterior of the tank. A visual and audible alarm (a light and horn) are located on the gauge boards to alert staff of a potential problem before overflow. The effluent/leachate storage tank (T6) level is recorded daily on the leachate reporting forms provided in Appendix A.

7.3 T6 EXTERIOR AND INTERIOR INSPECTIONS

The following describes the inspections of the effluent/leachate storage tank (T6) and steps to be followed after the inspections.

- Overfill Prevention System: The overfill prevention system components will be inspected weekly. These components include level sensors, gauges, high-level alarm, and automatic shutoff controls.

- Tank Exterior: The exterior of the tank and the secondary containment system will be inspected weekly for adequacy of the cathodic protection system, leaks, corrosion, and maintenance deficiencies. In addition, the inspection includes an evaluation of any structural damage to the tank, damage to the coating system, loose connections, corrosion, visible leaks, and maintenance deficiencies. The inspector will also look for any structural damage to the concrete slab or HDPE lining of the secondary containment system, peeling of the paint system, and visible leaks.

- Tank Interior: The interior of the tank will be inspected whenever the tank is drained or at least every three years. The inspector will look for any damage to the interior coating system, structural damage, cracking of the tank, visible leaks, and accumulation of sludge.

- Procedures for Corrective Actions: If inspections reveal any deficiencies with the tank or the secondary containment system that could result in failure of the system to contain the leachate, the SWMG shall take immediate action to correct the situation by assessing the problem and coordinating the required actions. Failures or damage to the tanks will be repaired by the tank manufacturer or a designated contractor. The SWMG shall notify the manufacturer or designated contractor of the situation; the tank manufacturer or designated contractor will remediate the tanks and prepare a detailed damage assessment report. FDEP will be notified in writing of the situation and of the proposed corrective action.

- Inspection Reports: Inspection reports and reports of any remedial action measures taken will be maintained at the SCLF and will be made available to FDEP upon request. The weekly inspection report form is provided in Appendix A. All reports will be maintained for the life of the tanks and the containment system.

7.4 ACID MIXER AND TANK

The acid dosing pumps at the effluent/leachate storage tank (T6) pump station inject sulfuric acid into the 4-inch effluent pipe. Landfill personnel monitor the pH by pulling grab samples from the sampling port or reading from the pH meter at the control panel, thereby allowing the acid dosing to be optimized and preventing large swings in pH. The acid dosing rate is controlled by an operator at the control panel using the pH readout to adjust the acid dose to achieve the appropriate pH range. Also, the system includes controls between the acid dosing pumps and the pH meter to allow automatic acid dosing. The acid dosing pump controls are connected to the booster pump controls so acid dosing will only occur when the booster pumps are running. In addition, when the booster pumps are signaled off, the acid dosing pumps stop and the booster pumps continue to run for approximately 30 seconds to allow the piping system to be flushed of any residual acid.

8.0 LEACHATE AND EFFLUENT DISPOSAL

Leachate is disposed of at the SCLF by various methods, including the on-site LTRF, hauling of raw leachate via tanker truck to a Hillsborough County WWTP, and truck-mounted spray evaporation of raw leachate within the contained working surface. Effluent from the on-site LTRF is disposed of by an effluent spray irrigation system, effluent evaporation, or transporting effluent via tanker trucks to a county WWTP.

8.1 EFFLUENT STORAGE POND A

The effluent storage pond (Pond A) receives treated leachate (effluent) from the LTRF or the effluent/leachate storage tank (T6). The pond was lined with 80-mil HDPE and provides for temporary effluent storage of 120,000 gallons plus one foot of freeboard. Using the existing staff gauge in the pond, Pond A is maintained at a maximum depth of 3.7 feet (elevation 136.9) and a minimum depth of six inches. The minimum depth of six inches provides head over the liner to prevent damage due to uplift from wind and other elements. Off-site hauling could increase if levels in Pond A reach the maximum level of 3.7 feet. In addition, an overflow pipe allows flow from Pond A into Pond B. Similarly, if levels are below six inches, irrigation, evaporation, and off-site hauling from Pond A will be temporarily reduced.

The following conditions and associated valve settings are provided on the MLPS operation instruction sheet and schematic in Appendix B.

1. Pump effluent from Pond A to spray irrigation system.

2. Pump effluent from Pond A to truck loading arm.

3. Recirculate effluent in Pond A to stabilize pH.

8.2 EFFLUENT/LEACHATE STORAGE POND B

The effluent/leachate storage pond (Pond B) provides an additional storage volume of 236,000 gallons and is located next to Pond A, as shown in Figure 3-1. Pond B was designed with one foot of storage for the 25-year/24-hour storm and one foot of freeboard. The pond was designed to store either raw leachate or effluent; however, Pond B's primary use is for additional storage of effluent from the LTRF or the effluent/leachate storage tank (T6). If the need for leachate storage arises, the SWMG will notify FDEP before using the pond for leachate storage. The notification to FDEP will include the reason(s) for leachate storage in the pond and the anticipated duration.

Pond B was designed with an upper and lower 60-mil HDPE geomembrane. An HDPE geonet was installed between the two liners. The subbase for the lower geomembrane consists of six inches of soil with a saturated hydraulic conductivity of 1×10^{-5} centimeters per second or less, installed over the on-site soil which was cleared of vegetation and graded. Supplemental

effluent evaporation in Pond B is provided using a spray evaporation system. The spray evaporation nozzle system was designed around the perimeter of the pond and consists of 30 nozzles, with an estimated flow capacity of 17 gpm per nozzle and a 510-gpm pump.

In general, the SWMG operates the spray evaporation system manually and only during the hours the landfill is open. The spray evaporation system is not operated during windy conditions (i.e., over 10 miles per hour) to prevent overspray outside the limits of the pond liner system.

The following conditions and associated valve settings are provided as part of the MLPS operation instruction sheets and schematic in Appendix B.

1. Effluent storage and spray evaporation operation in Pond B (standard practice).

2. Leachate storage in Pond B (special condition).

3. Resuming effluent storage in Pond B following leachate storage (special condition).

8.3 EFFLUENT IRRIGATION

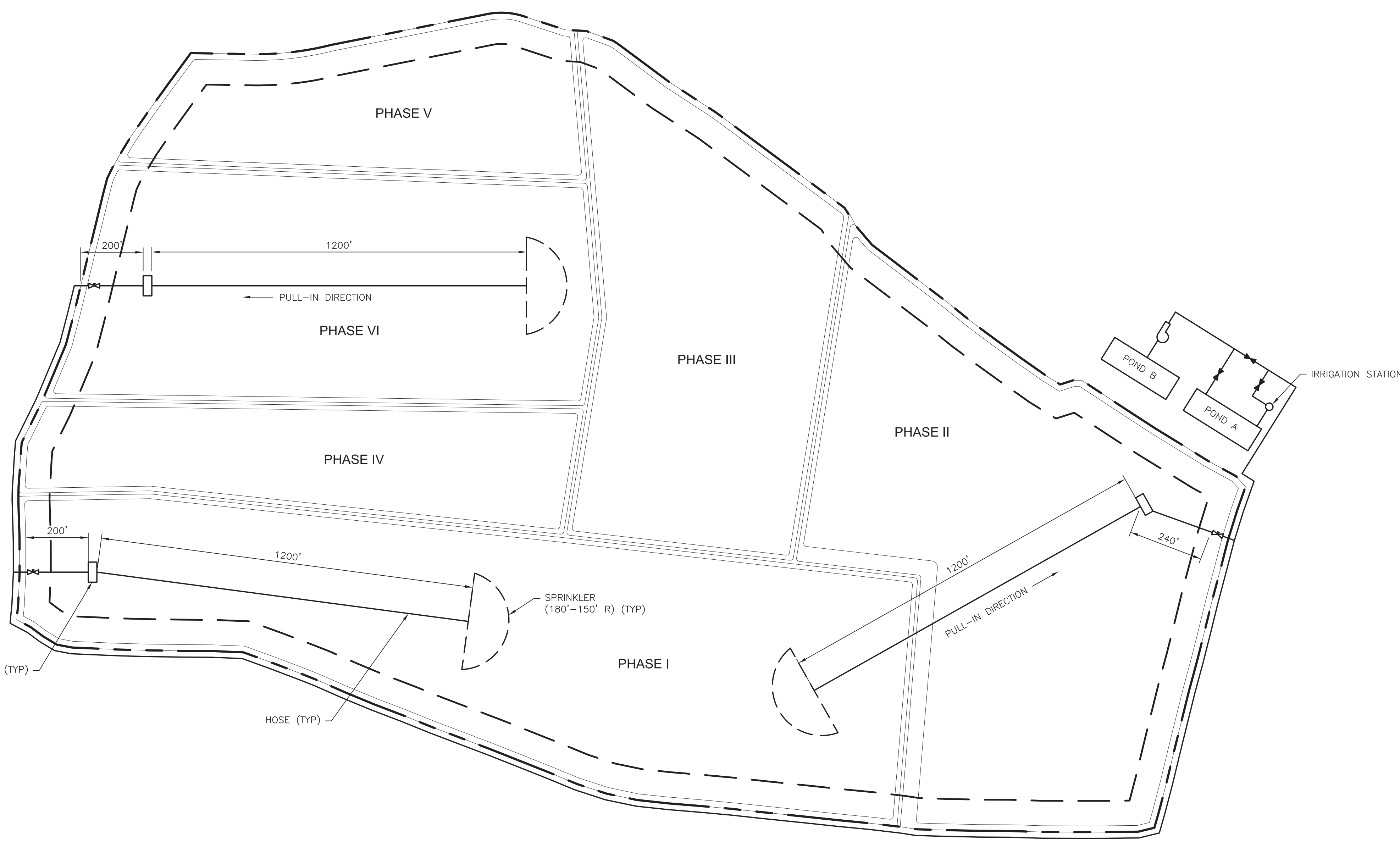
8.3.1 Effluent Irrigation Pump Station

The effluent irrigation pump station consists of a 5-foot square (inside dimension) below-grade concrete sump with dual vertical turbine pumps (one operating and one stand-by). From the effluent irrigation pump station, effluent is pumped to the spray irrigation system on the landfill. The pump in operation is set manually depending on weather conditions.

The effluent irrigation pump station is hydraulically connected to Effluent Pond A, and Effluent Pond A is hydraulically connected via pipe to Effluent/Leachate Pond B; therefore, if the effluent irrigation pump station reaches high level, it will drain to Ponds A and B and not overflow. Ponds A and B are visually monitored by landfill operations personnel and if high level conditions occur, steps are initiated as described in Sections 8.1 and 8.2 for Ponds A and B, respectively.

8.3.2 Effluent Spray Irrigation on Phases I-VI

The SWMG operates a mobile irrigation system consisting of two irrigation reels manufactured by ABI Irrigation, Model ABI Series 700 Model No. 110JX1312 with a GXE 1312 spray nozzle with a maximum application rate of 192 gpm. The mobile irrigation reels in Figure 8-1 are shown positioned on the west side of Phase I and on the east side of Phase II. These locations are shown for information purposes only since the position will change due to operational constraints with waste filling in Phase I-VI. Only effluent will be disposed of through the spray irrigation system.



LEGEND:

- APPROXIMATE LANDFILL LIMITS
- 100' SPRAY IRRIGATION MIN SETBACK
- 6"ø HDPE IRRIGATION HEADER
- GATE VALVE – NORMALLY CLOSED
- PUMP
- SOLENOID VALVE (TYP)

NOTE:

THE SPRAY IRRIGATION SPRINKLER REELS ARE MOBILE AND ARE MOVED AS NEEDED. THE LOCATIONS SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY.

200 100 0 200 400

SCALE: 1"=200'

HDR

LOCATION OF IRRIGATION SPRINKLER REELS

HILLS BOROUGH COUNTY, FLORIDA

FIGURE 8-1

The operational sequence of the mobile reel irrigators is as follows:

- Before each irrigation event, the medium-density polyethylene (PE) hose is stretched out with a vehicle (approximately 1,200 linear feet). At the end of the PE hose is a spray nozzle that applies the effluent across a large area to maximize evaporation and prevent runoff from draining into the stormwater system.

- Once both PE hoses have been stretched out across the top of the landfill, personnel manually turn on the irrigation pump. The pumps maintain an operating pressure in the irrigation reel. The reel is equipped with a drive system that automatically reels in the PE hose and spray irrigation nozzle at a preset rate (i.e., 200 feet per hour).

- At the end of the irrigation cycle, personnel manually turn off the irrigation pump.

Spray irrigation occurs under the following conditions:

- Spray irrigation is applied at a rate of one pass per day with a maximum application rate of 0.30 inch per day of effluent. Under no circumstances is effluent allowed to discharge as runoff to adjacent stormwater systems. Effluent is not sprayed during severe weather conditions or in quantities that may cause runoff, surface seeps, wind-blown spray outside of the landfill footprint, or ponding on the cover.

- Spraying takes place only when rainfall runoff into the on-site retention areas down gradient from the spray areas has terminated for two hours based on daily inspections of the influent point to each related retention area.

- Spray irrigation of effluent is not conducted within 100 feet of the landfill liner trench, on slopes steeper than 10%, nor on areas with permanent final cover.

- Spray irrigation may be used on areas with bare ground (little or no grass) or on areas which have been seeded to help with grass growth. These areas will not allow runoff to the stormwater system, as described in this Section.

- Spray irrigation of treated effluent will only be conducted only between 8:00 A.M. and 4:00 P.M.

The leachate reporting forms provided in Appendix A are completed monthly and submitted at least quarterly to FDEP and the Environmental Protection Commission (EPC) by the 15th of January, April, July, and October of each year. At a minimum, the following data are recorded daily.

- Effluent sprayed in gal/day.

- Rainfall on site in inches/day and time of day.
- Observed runoff influent to retention areas (yes and/or no).
- Time of day of inspection.

8.4 LEACHATE AND EFFLUENT EVAPORATION VIA TRUCK-MOUNTED SPRAYING

Evaporation is employed as a supplemental method of disposing of leachate. The supplemental evaporation of leachate involves spraying small quantities of leachate—an average of 9,700 gallons per day—from a spray bar mounted on the rear of a tank truck onto active-fill areas of the landfill. This approach has been used successfully at the SCLF since 1984. The advantages of this method are the reduction of leachate by evaporation, the promotion of the decomposition of organic matter in the landfilled refuse, and dust control.

The SWMG monitors the rate of application, soil moisture conditions, and the specific landfill areas used so that this leachate disposal method does not generate runoff. Leachate spray evaporation is applied under the following conditions.

- Leachate is only sprayed on active-fill areas, including the working face, and areas with the required six inches of initial cover.

- Leachate is not sprayed on areas with intermediate or final cover, seeded or unseeded.

- The maximum grade leachate may be sprayed on is 10H:1V slope. Areas within 150 feet of a 4H:1V or steeper sideslope may not be sprayed on. At all times, areas receiving leachate are controlled to prevent leachate runoff from entering the stormwater system.

- Leachate is not sprayed when it is raining.

- The tank truck spray bar method maximizes evaporation. The application rate of leachate will be such that leachate does not accumulate on the landfill surface nor infiltrate quickly into the covered refuse. Evaporation is the main goal of this leachate disposal method.

- Leachate is not sprayed at the end of the day on the initial cover of the working face or other areas. Spraying is done early in the morning after any dew evaporates and continues until early afternoon or until all available areas have been sprayed.

The SWMG evaporates leachate and effluent in full conformance with Chapter 62-701, FAC. The SWMG notifies FDEP of all evaporated quantities in the monthly water balance reports.

8.5 EFFLUENT AND LEACHATE TRUCK LOADING FACILITIES

8.5.1 Truck Loading Procedures

Truck loading facilities are located at the LTRF, Effluent Pond A, and the effluent/leachate storage tank (T6). Operating procedures and valve settings for each station are provided in the instruction sheets and schematics provided in Appendix B.

The truck loading stations include a loading arm for discharging stored leachate or effluent from the leachate storage tank (T1), effluent/leachate storage tank (T6) and Pond A to a transfer tanker for disposal. Tanker trucks remove the liquid from the LTRF, effluent/leachate storage tank (T6), or Pond A and transport the liquid to a County WWTP.

The truck loading facilities are equipped with flow meters that provide readout of the gallons of liquid that have been pumped into the tanker trucks. The capacity of each tanker truck is approximately 6,000 to 8,000 gallons, and the leachate tankers are normally filled. If the flow meter gauges are inoperable or not accurate, the quantity of leachate removed can be determined by converting the weight for the truck scale weight tickets to gallons (tons x 2,000 lb/ton/ 8.34 lb/gal = gallons).

Appendix A includes a Leachate Hauling/Disposal Reporting Form for use when loading leachate or effluent for off-site disposal. The daily field data entry form provided in Appendix A includes recording leachate storage tank (T1) levels. The external level indicators provide a measured indication of the depth of the leachate or effluent in the storage tanks. Information required includes the time of day and the level indicated on the side of the storage tank. Each reading of the storage tanks should be conducted at approximately the same time each day. This will provide the landfill operations personnel with a relative basis for comparing the amount of leachate stored daily and generated daily.

The SWMG has its own tanker trucks as well as a contract with haulers and WWTPs to haul and treat leachate stored in the tanks for disposal. The private tanker vehicles are required to have onboard pump systems or provide portable pumps if the storage system pumps fail.

8.5.2 Wastewater Treatment Plants

Leachate can be disposed of off site at a county-owned WWTP. Agreements exist with two of Hillsborough County's WWTPs for leachate or effluent disposal. Hillsborough County and private contract fleets are used to haul the leachate to the WWTP. Leachate will be measured by a flow meter as the tanker trucks are loaded at the LTRF truck loading stations.

9.0 LEACHATE MONITORING, FLOW MEASUREMENT, DATA COLLECTION, AND REPORTING

9.1 GENERAL LEACHATE MONITORING

SWMG field sampling personnel conduct leachate sampling activities in accordance with applicable FDEP standard operating procedures for field sampling. The leachate samples are collected from Location No. 001 (see Figure 3-1); at the PS-A sump; and from Locations No. 007 and No. 009 at the Sections 7, 8, and 9 (see Figure 3-2) sumps by grab sample using a decontaminated Teflon bailer. A Teflon flow-control valve attached to the bailer is used to empty the contents into the volatile organic compound (VOC) sample container to minimize aeration. The samples are containerized in the appropriate sample containers and labeled, sampling procedures are summarized in field documentation, and the sample containers are secured in a cooler on wet ice. A standard chain of custody log will be completed and included with the samples. The cooler is sealed with a custody Seal and shipped by common carrier to an FDEP- and Florida Department of Health (FDH)-approved environmental laboratory for analysis.

Leachate is collected and analyzed annually for the parameters listed in section 9.1.1.

If leachate is classified as a hazardous waste, it will be managed in accordance with Chapter 62-730, FAC, "Hazardous Waste."

9.1.1 Leachate Quality

Annual leachate influent sampling is conducted for analysis of the following parameters.

Field Parameters	Laboratory Parameters
Specific conductivity	Total ammonia - N
pH	Total alkalinity (as mg/L CaCO3)
Dissolved oxygen	Bicarbonate
Colors and sheens	Chlorides
(by observation)	Iron
	Mercury
	Nitrate
	Sodium
	Total dissolved solids (TDS)
	Biochemical oxygen demand (BOD_5)
	Chemical oxygen demand (COD)
	Those parameters listed in 40 CFR Part 258, Appendix II

9.1.2 Effluent Quality

To provide reasonable assurance of adequate leachate treatment, the SWMG samples and analyzes the treated leachate (effluent) semi-annually for primary and secondary drinking water parameters and EPA priority pollutants. Samples will be taken after the LTRF has achieved steady-state conditions with regard to its treatment capability or within 30 days after downtime due to maintenance or repairs, whichever is less.

In addition, effluent grab samples before disposal are taken for the following parameters at the frequency indicated:

Parameter	Frequency	Units
pH	weekly	Std. Units
BOD_5	monthly	mg/L
COD	monthly	mg/L
TSS	monthly	mg/L
$N0_3$-N	monthly	mg/L
TDS	monthly	mg/L

9.1.3 Biosolids Quantity and Disposal

The biosolids from the LTRF are disposed of at the SCLF if they are found to be non-hazardous and pass the paint filter test. The biosolids are sampled and analyzed annually for EPA priority pollutants, the toxicity characteristic leaching procedure (TCLP), and for the following parameters:

Parameters	Units
Total nitrogen	percent (dry weight)
Total phosphorus	percent (dry weight)
Total potassium	percent (dry weight)
Arsenic	mg/kg (dry weight)
Cadmium	mg/kg (dry weight)
Copper	mg/kg (dry weight)
Lead	mg/kg (dry weight
Mercury	mg/kg (dry weight)
Molybdenum	mg/kg (thy weight)
Nickel	mg/kg (dry weight)
Selenium	mg/kg (dry weight)
Zinc	mg/kg (dry weight)
pH	std. units
Solids	percent

If the biosolids are found to be hazardous, the material will be managed in accordance with Chapter 62-730, FAC, “Hazardous Waste.”

9.2 PHASES I-VI MONITORING

9.2.1 Leachate Sampling Locations

Leachate from the Phases I-VI area is sampled annually from Sample Location No. 001 at PS-A (see Figure 3-1). The applicable FDEP standard operating procedures are used to collect a leachate grab sample from the PS-A sump. The results of the leachate analyses will be documented.

9.2.2 Flow Measurement

For Phases I-VI, the leachate quantity is recorded by flow meters at PS-A and TPS-6. SWMG personnel record flow meter readings each day the SCLF is open and the quantities are reported to FDEP. Sample leachate reporting forms are included in Appendix A.

When pumping records from TPS-6 and PS-B show that in two consecutive months the average daily flow rate from TPS-6 is less than 250 gallons per day, TPS-6 will be shut down and removed from operation.

9.2.3 PS-B Settlement Plates

Four settlement plates were installed at the bottom of each corner of the vault for PS-B in Phase VI. The rods for these plates have been extended during operation of the landfill. The elevation of these plates will be measured annually. The historical measurements are provided in Appendix C. These records have shown that PS-B has been settling as predicted and as discussed in Part I of the June 2013 Phases I-VI and Capacity Expansion Area (Sections 7, 8, and 9) Permit Renewal Application. The rods for the settlement plates will be less accurate as operations continue due to deformation from settlement of the waste between the top of waste and PS-B. If, after two consecutive annual measurements from any of the four settlement plates there is no change in elevation, that settlement plate is assumed to be malfunctioning and will not be measured in future events. The settlement at malfunctioning settlement plates is assumed to be the same as the settlement measured at adjacent functioning plates.

9.2.4 Bottom Liner Clay Evaluation

Approximately one year before a particular phase of Phases I-VI is entered, an in-situ, undisturbed, clay sample will be collected from beneath the phase proposed to be filled. The collected clay sample will be tested and the shear strengths computed.

The in-situ, undisturbed, clay sample will be tested either using a direct shear test (ASTM D-3080) or tri-axial test (ASTM D-2850) method to determine the clay strength. Three individual testing points—covering the existing, proposed filling, and proposed final build-out pressures—will be conducted. A representative phi and cohesion value will be determined to cover proposed filling and final build-out strengths.

Slope stability models, using both sliding block and circular failure methods, will be conducted on the proposed filling and the final-build out conditions. If a factor of safety (FS) of 1.5 or greater is achieved for a particular filling scenario, that particular phase is deemed complete and no further testing for that phase is necessary. If a particular filling scenario does not achieve a FS of 1.5 or greater, recommendations for filling the phase will be provided.

Results of the slope stability models, along with a report and recommendations signed and sealed by a professional engineer, will be submitted to FDEP for approval at least six months before filling begins in that phase.

9.3 CAPACITY EXPANSION AREA MONITORING

9.3.1 Sampling Locations

Leachate from Sections 7, 8, and 9 of the CEA are sampled annually from Sample Port No. 007 and No. 009 located at the sideslope riser at the Section 7 valve vault and the Section 9 sideslope riser, respectively, as shown in Figure 3-2. The sampling ports for these locations are shown in the associated schematics provided in Appendix B. Note that there are multiple sampling ports—labeled 007, 007a, 009, 009a, and 009b—at the Section 7 and Section 9 pump stations. These names are given to help the operator identify each valve; however, only one leachate sample will be collected from Section 7 and Section 9 for leachate monitoring. The appropriate sampling port will be used by the sampling team. The results of the leachate analyses will be documented.

9.3.2 Flow Measurement

Under standard practice, leachate from Sections 7 and 8 is collected from the sump risers in the southwest corner of Section 7 at PS-7 and leachate from Section 9 is collected from the south slide slope riser at PS-9. The leachate from Sections 7 and 8 is pumped to the MLPS and then via force main to the leachate storage tank (T1). The leachate force main from PS-9 is tied into the MLPS force main to the leachate storage tank (T1); therefore, leachate is pumped directly from Section 9 to the leachate storage tank (T1). The leachate quantities from Section 9 and the MLPS are recorded by separate flow meters before the flow combines in the force main to the leachate storage tank (T1). SWMG personnel record flow meter readings each day the SCLF is open, and report the quantities to FDEP. Sample leachate reporting forms are included in Appendix A.

9.3.3 Leachate Detection Action Leakage Rate

The action leakage rate (ALR) is defined in 40 CFR 265.302 as the maximum design flow rate that the leak detection system (LDS) can remove without the leachate head on the bottom of the liner exceeding one foot. In accordance with Rule 62-701.400(3)(c)2., FAC, the LDS should be designed to limit the head in the LDS to less than one inch of head or the thickness of the geocomposite.

The ALR for Sections 7 and 8 is 100 gal/acre/day. The total estimated footprint area of Sections 7 and 8 is approximately 19.3 acres. An initial response ALR of 1,930 gpd (19.3 acres x 100 gal/acre/day) will be used for the flow rate measured from Sections 7 and 8. The leachate flow from the Section 7 and 8 LDS system is measured by the flow meter from the LDS pump in the southeast corner sump of Section 7.

The ALR for Section 9 is 306 gal/acre/day. The total estimated footprint of Section 9 is 15.2 acres. An initial response ALR of 4,651 gpd will be used for the flow rate measured from Section 9. The leachate flow from the Section 9 LDS system is measured by the flow meter from the LDS submersible pump in the south end sump of Section 9.

Initial ALR actions will include the following.

- Check the pump and flow meter at the LDS sideslope riser for proper operation.
- Increase the pumping rate from the LDS to lower the stored levels of leachate. A pocket or slug of leachate may have been conveyed to the LDS riser. Upon further pumping, the levels or flow rates may be lowered below the ALR.
- Check the cover or capping systems over Sections 7 and 8 or Section 9 to reduce infiltration into the LDS.
- Continue monitoring the flow rates out of the LDS, based on the recommendations above to determine further action, if needed.

If the ALR for Sections 7, 8 or 9 is exceeded, FDEP and EPC will be notified and a written assessment provided within seven days. The written assessment shall demonstrate continued compliance with the double-liner requirements specified in Rule 62-701.400(3)(c)2, FAC, or a corrective action plan and schedule for implementation shall be submitted for FDEP approval.

9.4 MAIN LEACHATE PUMP STATION

Operation of the MLPS is described in Section 4.3.

9.5 LEACHATE TREATMENT AND RECLAMATION FACILITY

Sampling of the LTRF biosolids and effluent is described in Sections 9.1.2 and 9.1.3.

10.0 MAINTENANCE AND INSPECTION

10.1 LEACHATE COLLECTION SYSTEM SCHEDULE FOR MAINTENANCE AND INSPECTION

The leachate facilities are inspected daily. The leachate collection and removal systems will be water pressure cleaned or video inspected as needed during the duration of the permit. The leachate system components will also be maintained as needed. Routine maintenance for these components at the SCLF is performed following the schedule in Table 10-1.

10.2 STORAGE TANK MAINTENANCE AND INSPECTION

Storage tank maintenance and inspection procedures are discussed in Sections 5.0 and 7.0.

Table 10-1 Schedule for Maintenance

Component	Frequency	Performance Criteria	Corrective Action
Pump Station A (PS-A)	Pump: semi-annual. Sump: annual.	Pump is unable to maintain the required levels in the sump. Inspect for sediment in sump and adequacy of level controls by testing the automatic on/off float settings (see LMP Section 4.1.1 for PS-A float settings).	Pump inspected for damage or other problems and repaired or replaced as needed. Replacement pump will be installed within 24 hours. If PS-A cannot be repaired before pumping is required, the bypass line will be used to pump leachate from PS-B directly to the MLPS. For level controls (i.e., floats and control panel), if testing fails, remedial measures will be initiated immediately by contacting an electrician and the condition will be corrected within 48 hours. Excessive sediment in the sump will be removed within two weeks after inspection.
Pump Station B (PS-B)	Pump: semi-annual. 18-inch access pipes; at time of permit renewal.	Pump is unable to maintain the required levels in the sump. Inspect for adequacy of level controls. Manually pump sump until air enters the pump; at that time bubbler should read between 0 to 4 inches (see LMP Section 4.1.2 for PS-B sensor settings). If blockage of the 4-inch suction line or the bubbler pressure tube is suspected, remove the suction line for inspection.	Pump inspected for damage or other problems and repaired or replaced as needed. Replacement pump will be installed within 24 hours. For level controls failure, remedial measures will be initiated immediately by contacting DCC and the condition will be corrected within 48 hours. If needed, water pressure clean the interior of the 4-inch suction line. The 18-inch access pipes will be water pressure cleaned and video inspected as needed at time of permit renewal. If the 18-inch access pipes are not performing adequately, the

Table 10-1 Schedule for Maintenance

Component	Frequency	Performance Criteria	Corrective Action
			SWMG will submit to FDEP and EPC an evaluation report with proposed remedy.
Main Leachate Pump Station (MLPS)	Pump: semi-annual. Sump: annual.	Pump is unable to maintain the required levels in the sump. Inspect for sediment in sump and adequacy of level controls by testing the automatic on/off float settings (see LMP Section 4.3 for MLPS float settings).	Pump inspected for damage or other problems and repaired or replaced as needed. Replacement pump will be installed within 24 hours. For level controls (i.e., floats and control panel), if testing fails remedial measures will be initiated immediately by contacting an electrician and the condition will be corrected within 48 hours. Excessive sediment in the sump will be removed within two weeks after inspection.
Temporary Pump Station 6 (TPS-6)	Pump: semi-annual.	Pump is not operational. Inspect mechanical operation of pump. Manually check radio telemetry to ensure signal is reaching PS-B. Inspect for adequacy of level controls at PS-B. If blockage of the 3-inch suction line or the bubbler pressure tube is suspected, remove the suction line for inspection.	Pump inspected for damage or other problems and repaired or replaced as needed. Replacement pump will be installed within 48 hours. For level controls failure, remedial measures will be initiated immediately by contacting DCC and the condition will be corrected within 48 hours. If needed, water pressure clean the interior of the 3-inch suction line.
Storage Pond A	Surface: annual.	Empty, water pressure clean, and remove sediment. Visually inspect geomembrane for punctures, seam continuity, and defects around concrete sump.	Defects found will be repaired before reusing the pond.
Storage Pond B	Surface: annual Leak detection: weekly.	Empty, water pressure clean, and remove sediment. Visually inspect geomembrane for punctures, seam continuity, and defects around concrete sump. If leak detection rate is higher than 1,500 gpd, empty pond and inspect geomembrane for defects.	Defects found will be repaired before reusing the pond.
Storage Tanks	Exterior: weekly. Interior: whenever the tank is drained or every three years.	Inspect for adequacy of the cathodic protection system, leaks, corrosion, level controls, and maintenance deficiencies	Deficiencies that could result in failure of the tank or leaks will be corrected before reusing the tank. For level controls failure, remedial measures will be initiated immediately by contacting an electrician and the condition will be corrected within 48 hours.
Section 7 Pump	Semi-annual.	Pump is unable to maintain the required levels in the sump.	Pump inspected for damage or other problems and repaired or replaced as needed.
Section 9 Pump	Semi-annual.	Pump is unable to maintain the required levels in the	Pump inspected for damage or other problems and

Table 10-1 Schedule for Maintenance

Component	Frequency	Performance Criteria	Corrective Action
		sump.	repaired or replaced as needed.
Leachate collection and removal system	Twice during permit period	Water pressure clean or video inspect as needed at the existing cleanout locations.	If any component is not performing adequately or if a problem is shown by the video inspection, the SWMG will submit to FDEP and EPC an evaluation report with proposed remedy.

11.0 CONTINGENCY PLANS

FDEP and EPC will be notified of any equipment failure or event that disrupts the routine operation of the leachate management system. If the need for storing leachate in Pond B and/or the effluent/leachate storage tank (T6) arises as described in Sections 8.2 and 7.0, respectively, the SWMG will notify the FDEP and EPC. The person responsible for operation of the SCLF is the Landfill General Manager (currently Mr. Larry Ruiz). The Landfill General Manager reports to the Solid Waste Group Manager (currently Ms. Patricia V. Berry). The SWMG will continue to evaluate the accuracy and applicability of this leachate management plan and will propose modifications as necessary to accomplish the objectives of the leachate management plan and continue the proper management of leachate at the SCLF. The following sections provide information regarding contingency operations for specific events which may occur at the SCLF.

11.1 REPLACEMENT OF FLOW METERS

If a flow meter ceases to operate, maintenance personnel will remove the instrument and insert a spare flow meter. If the spare flow meter is not available or not working, a pipe spool piece will be inserted in its place to allow the leachate to flow from the transfer pump. The instrument will be shipped to the service representative or manufacturer for repair or replacement. It is anticipated that the instrument could be removed from service for up to three months. This schedule includes the issue of a Hillsborough County purchase order, shipping, and maintenance time or new part delivery. During this time, leachate production will be determined by recording the run-time meter on the transfer pumps. Leachate production of a specific pump can be estimated by taking the difference in the run-time readings and the rated pump test flow rate.

11.2 STORAGE TANK SECONDARY CONTAINMENT SPILL COUNTERMEASURES

As discussed in previous sections, the LTRF leachate tank system is contained within a concrete containment area. The containment area has two sumps for stormwater drainage with 6-inch diameter HDPE pipes and gate valves that are normally closed. The effluent/leachate storage tank (T6) is contained within a high-density polyethylene (HDPE) liner. The containment area has one secondary sump for stormwater, effluent/leachate drainage. Before draining stormwater from the containment areas, the SWMG will visually inspect the stormwater and the tanks to ensure that no leaks have occurred. If no spills have occurred, the sump valves will be opened to drain the stormwater accumulated in the containment area. Under supervision by the Landfill General Manager (or qualified designee), the sump valves will be closed immediately after the stormwater is drained.

If a liquid spills from the LTRF tankage system, the following will be done.

1. Assess the cause of the spill and correct the condition promptly.

2. If the spill condition is at the leachate storage tank (T1) (575,000 gallons):
   a. Shut down the MLPS and PS-9.

b. Shut down the LTRF filtrate pumps. The LTRF may continue to operate.
c. With a sump pump, transfer the spilled liquid directly into tanker trucks for disposal at an off-site Hillsborough County WWTP.

3. If the spill condition is at the LTRF process tank (T2) or the secondary stage clarifier tank (T3):
   a. Shut down the LTRF.
   b. The MLPS continues to operate.
   c. With a sump pump, transfer the spilled liquid directly into tanker trucks for disposal at an off-site Hillsborough County WWTP or into the leachate storage tank (T1).

4. If the spill condition is at the effluent storage tank (T5):
   a. Shut down the LTRF.
   b. The MLPS continues to operate.
   c. With a sump pump, transfer the spilled liquid directly into tanker trucks for disposal at an off-site Hillsborough County WWTP or into the leachate storage tank (T1).

5. If the spill condition is at the effluent/leachate storage tank (T6):
   a. Shut down the LTRF effluent pumps. The LTRF may continue to operate.
   b. With a sump pump, transfer the spilled liquid directly into tanker trucks for disposal at an off-site Hillsborough County WWTP or into the leachate storage tank (T1). Refer to the instruction sheet for this condition in Appendix B.

6. If the spill condition is at the methanol tank (red tank at LTRF):
   a. Shut down the LTRF.
   b. Turn the LTRF electrical power off at the circuit breaker located outside the LTRF office on the south wall and evacuate staff.
   c. Shut down the MLPS and PS-9.
   d. Contact the current hazardous waste contractor. The contractor will manage the removal, off-site disposal, and containment area cleanup for methanol.

7. For spill conditions No. 2, 3, and 4 above, after the spilled liquid is removed, SWMG personnel will water pressure wash the containment area and the rinse water will be pumped directly into a tanker truck for disposal at an off-site county WWTP.

8. If the leachate storage tank (T1) will remain out of service for more than 48 hours, the SWMG will resume leachate removal from the SCLF to either the effluent/leachate storage tank (T6) or Storage Pond B by following the procedures detailed in the instruction sheets provided in Appendix B. Leachate hauling off

site can resume from the effluent/leachate storage tank (T6) or Pond B by following the procedures included on the instruction sheets for these areas provided in Appendix B. If the effluent/leachate storage tank (T6) is unavailable for leachate or effluent storage, Pond B can also be used for back-up storage capacity. Leachate can be diverted back to the leachate storage tank (T1) via the MLPS or to the truck loading facility from Pond B. Leachate can also be diverted back to the leachate storage tank (T1) from the effluent/leachate storage tank (T6).

9. Within 24 hours of the spill occurrence, the SWMG will verbally notify FDEP and EPC. A written report with remedial measures taken will be submitted to FDEP and EPC within seven days after the leachate spill incident.

APPENDIX A

LEACHATE REPORTING AND INSPECTION FORMS

HILLSBOROUGH COUNTY SOUTHEAST COUNTY FACILITY
LEACHATE MANAGEMENT
DAILY FIELD DATA ENTRY FORM

Disposal Area (check one)	Phases I-VI	Sections 7-8	Section 9

Technician:	Start Time:

Location	Date (prior day)	Date (today)	Total
Temporary Pump Station #6, gal			
Pump Station A, gal			
Pump Station B, inches(1)	9"+	9"+	
Section 9 Pump #1, gal			
Section 9 Pump #2, gal			
Section 9 LDS, gal(2)			
Sections 7-8 Pump, gal			
Sections 7-8 LDS, gal(3)			
Depth in Pond B, feet(4)			
Pond B LDS, gal(5)			
Pond B Spray, gal			
Depth in Pond A, feet(6)			
Spray Irrigation Pump, gal(7)			
Main LTP Leachate Bypass, gal			
Depth in Leachate Tank, feet(8)			
Depth in Effluent Tank, feet(8)			

Notes: (1) If greater than 24 inches, contact Supervisor immediately.

(2) If rate is greater than 4,651 gallons per day, contact Supervisor immediately.

(3) If rate is greater than 1,930 gallons per day, contact Supervisor immediately.

(4) If greater than 4.4 feet, contact Supervisor immediately.

(5) If rate is greater than 1,500 gallons per day, contact Supervisor immediately.

(6) If greater than 3.7 feet, contact Supervisor immediately.

(7) If runoff observed, STOP irrigation and contact Supervisor immediately.

(8) If level is greater than 15 feet, contact Supervisor immediately.

Comments:

TABLE 1. LEACHATE WATER BALANCE REPORT FORM
OCTOBER 20XX
SOUTHEAST COUNTY LANDFILL, HILLSBOROUGH COUNTY, FLORIDA

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII	XXIII	XXIV
Day	Rainfall (in.)	Depth in Pond A (ft.)	Depth in Pond B (ft.)	Estimated Depth at PS-B (in.)	Leachate Pumped to PS-B from TPS-6 (gal.)	Leachate Pumped to MLPS from Phases I-VI (gal.)	Leachate Pumped from Sections 7-8 LDS (gal.)	Leachate Pumped to MLPS from Sections 7-8 (gal.)	Leachate Pumped to LTRF from MPLS (gal.)	Leachate Pumped to LTRF from Section 9 (gal.)	Leachate Pumped from Section 9 LDS (gal.)	Leachate in 575K Tank (gal.)	Effluent in 575K Tank (gal.)	Leachate Treated at LTRF (gal.)	Total Leachate Hauled (gal.)	Leachate Dust Control (Sprayed) (gal.)	Pond A Storage (gal.)	Pond B Storage (gal)	Effluent Sprayed Pond B (gal)	Effluent Irrigation (gal.)	Effluent Dust Control (Sprayed) (gal.)	Total Effluent Hauled (gal.)	Total Evaporation (gal.)
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							
13																							
14																							
15																							
16																							
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22																							
23																							
24																							
25																							
26																							
27																							
28																							
29																							
30																							
31																							
Total																							
Daily Average																							
Mo. Average																							

Notes:
1. NR = No Records, NA = Not Available.
2. Values in bold are estimated; values in italic are substitute for missing data and are based on averaged values.
3. Daily average is calculated by dividing the total by the actual days measured in the month.
4. Monthly average calculated by dividing the total by the number of days of the month.
5. Column II, Trace is less than 0.01 inches and is not included in total.
6. Columns III and IV, field measured at staff gauges.
7. Column V, PPS-B sensor reading plus 9 inches.
8. Columns VIII & IX, Section 7-8 leak detection pumped into Section 7 leachate sump riser.
9. Column XIII and XIV, calculated from depth in 575,000 gal. tanks.
10. Columns VI-XII, XV-XVII, and XX-XXIII, quantities from flow meters.
11. Column XXIV includes 80% of the daily values from Columns XVII, XXI, and XXII plus 5% of the daily values from column XX.

TABLE 2. FIELD DATA ENTRY FORM
OCTOBER 20XX
SOUTHEAST COUNTY LANDFILL, HILLSBOROUGH COUNTY, FLORIDA

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
Day	Rainfall (in.)	Flow Meter TPS-6 (gal.)	Flow Meter Pump Sta. A (gal.)	Reading PS-B (in.)	Section 9 Pump 1 (gal.)	Section 9 Pump 2 (gal.)	Section 9 LDS (gal.)	Sections 7-8 Pump (gal.)	Sections 7-8 LDS (gal.)	Pond B Depth (ft.)	Pond B Effluent Sprayed (gal)	Pond A Depth (ft.)	Effluent Spray Irrigation (gal.)	Depth in 575K Tank Leachate (ft.)	Depth in 575K Tank Effluent (ft.)	Leachate Treated at LTRF (gal.)	Leachate Hauled		Leachate Dust Control (Sprayed) (gal.)	Effluent Hauled		Effluent Dust Control (Sprayed) (gal)
																	Contractor (gal.)	County (gal.)		Contractor (gal.)	County (gal.)	
1																						
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
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23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
Totals																						

Notes:

1. NR = No Records, NA = Not Available.
2. Values in bold are estimated; values in italic are substitute for missing data and are based on averaged values
3 Column IV includes quantities from leak detection system.
4. Column B, trace is less than 0.01 inches.
5. Columns C, D, F, G, H, I, J, L, N, Q, R-V and W are quantities from flow meters.
6. Columns K and M measured from staff gages in each pond.

Type of Cover	Phases I-VI acres	Sections 7-8 acres	Section 9 acres
Open			
Intermediate			
Final			
Not Opened			

TABLE 3. LEACHATE BALANCE SUMMARY
SOUTHEAST COUNTY LANDFILL
HILLSBOROUGH COUNTY, FLORIDA
YEAR-20XX

		Leachate Arriving at LTRF				Leachate Leaving LTRF			Effluent Disposal			Inflow / Outflow For LTRF		
Month	Rainfall (in.)	Condensate from LFG System (gal.)	Leachate from Section 9 Pumped to LTRF (gal.)	Leachate from Section 7-8 Pumped to LTRF (gal.)	Leachate from Phases I-VI Pumped to LTRF (gal.)	Total Leachate Hauled from LTRF (gal.)	Leachate Dust Control (Sprayed) (gal.)	Leachate Treated at LTRF (gal.)	Total Effluent Hauled (gal.)	Effluent Dust Control (Sprayed) (gal.)	Effluent Irrigation (gal.)	Total Inflow to LTRF (gal.)	Total Outflow from LTRF (gal.)	Change in Storage[2] (gal.)
January														
February														
March														
April														
May														
June														
July														
August														
September														
October														
November														
December														
YTD Total														

Notes:
1. If the bypass at the effluent pond is ever used to pump effluent back to the LTRF, this table must be modified.
2. Change in storage represents total inflow to LTRF minus total outflow from LTRF.

Leachate Treatment Facility Flows

Day	Influent	Total	Effluent	Total
Last				
1		0		0
2		0		0
3		0		0
4		0		0
5		0		0
6		0		0
7		0		0
8		0		0
9		0		0
10		0		0
11		0		0
12		0		0
13		0		0
14		0		0
15		0		0
16		0		0
17		0		0
18		0		0
19		0		0
20		0		0
21		0		0
22		0		0
23		0		0
24		0		0
25		0		0
26		0		0
27		0		0
28		0		0
29		0		0
30		0		0
31		0		0

Southeast County Landfill
Storage Tanks Inspection

Date: _____ Time: _____

			LEACHATE	PROCESS	2ND STAGE CLARIFIER	METHANOL	EFFLUENT #1	EFFLUENT #2
			T1	T2	T3	T4	T5	T6
TANKS	1	Any visible leaks? (Y/N)						
	2	Any dents or scratches evident?						
	3	Any exterior corrosion?						
	4	Level controls in good condition?						
	5	Current Cathodic Protection		N/A	N/A	N/A	N/A	
	6	Volume of Tank (gals)	575,000	220,000	19,000	1,700	3,700	575,000
	7	Material of Construction:	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL
		Comments:						
PIPES	7	Any pipes bent or deformed?						
	8	Any joints or connections leak?						
	9	Are the pipes free of corrosion?						
		Comments:						
CONTAINMENT	10	Is containment area in good condition?						
	11	Is there non-stormwater in the secondary containment area?						
	12	If no, was the stormwater released?						
		Comments:						

Inspector's Signature: _____

SOLID WASTE MANAGEMENT DEPARTMENT
SOUTHEAST COUNTY LANDFILL

LEACHATE HAULING / DISPOSAL REPORTING FORM

DATE: _____

DISPOSAL LOCATION: _____

Time loaded	PRODUCT E / L	LOAD NO.	GALLONS	METER READING START	METER READING END	pH	Time unloaded
		TOTAL:					

Signature: _____
Driver

Signature: _____
Plant Operator

Comments_____

Was sample taken: Y N if yes, sample was taken by: _____Date:_____Time:_____
Initials

E = Effluent (Treated Leachate)
L = Leachate (Raw Leachate)

Note: Gallons are to be recorded and totaled daily.

White: Contractor Yellow: Solid Waste Pink or Goldenrod: Plant Operator

APPENDIX B

LEACHATE MANAGEMENT SYSTEM INSTRUCTION SHEETS AND SCHEMATICS

OPERATION PROCEDURE FOR PUMP STATIONS A & B (PS-A and PS-B)

Pump Station B (PS-B) removes leachate from the landfill Phases I-VI and discharges into the Pump Station A sump (PS-A).

The standard practice valve settings are as follows:

1. Valves 1, 3, 4, 5, and 6 are OPEN.

2. Valves 2, 7, 8, 9, and 10 are CLOSED.

3. Standard practice is for Pump No. 1 to be in operation.

All of the following conditions begin from the standard practice valve settings shown above.

To use Pump No. 2 go to Step 4 or to use the Backup Pump go to Step 6.

4. CLOSE Valves 5 and 6, then ensure Valves 9 and 10 are CLOSED.

5. OPEN Valves 7 and 8. (DO NOT PROCEED TO STEP 6)

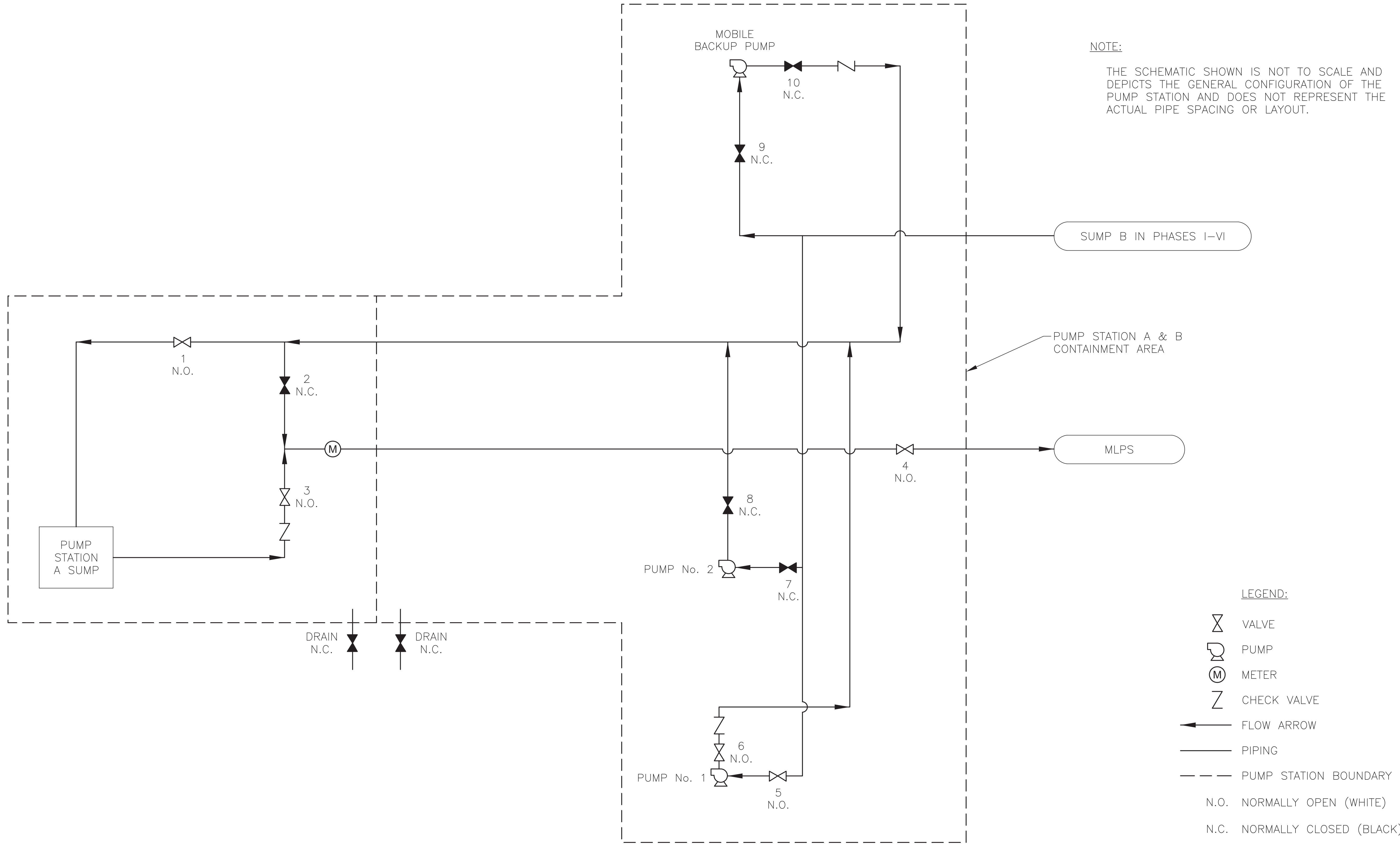
6. CLOSE Valves 5 and 6, then ensure Valves 7 and 8 are CLOSED.

7. OPEN Valves 9 and 10.

If PS-A needs to be repaired or maintained, PS-B can bypass PS-A and discharge directly into the Main Leachate Pump Station by performing the following:

1. CLOSE Valves 1 and 3.

2. OPEN Valve 2. Ensure Valve 4 is OPEN.



HDR

PUMP STATIONS A & B SCHEMATIC

HILLS BOROUGH COUNTY, FLORIDA

FIGURE B-1

OPERATION PROCEDURE FOR TEMPORARY PUMP STATION 6 (TPS-6)

Temporary Pump Station 6 (TPS-6) operates using the primary Mobile Pump 1 (Pump 1). A mobile backup pump (backup pump) is in place to be used as necessary. TPS-6 pumps from Cleanout 4-1 to Sump B in Phases I-VI. Under standard practice Pump 1 is on/off running in tandem with Pump Station B (i.e., via radio telemetry, TPS-6 will start and stop at the same time as PS-B).

The standard practice valve settings are as follows:

1. Valves 1 and 2 are OPEN.

2. Valves 3 and 4 are CLOSED.

The following condition begins from the standard practice valve settings shown above.

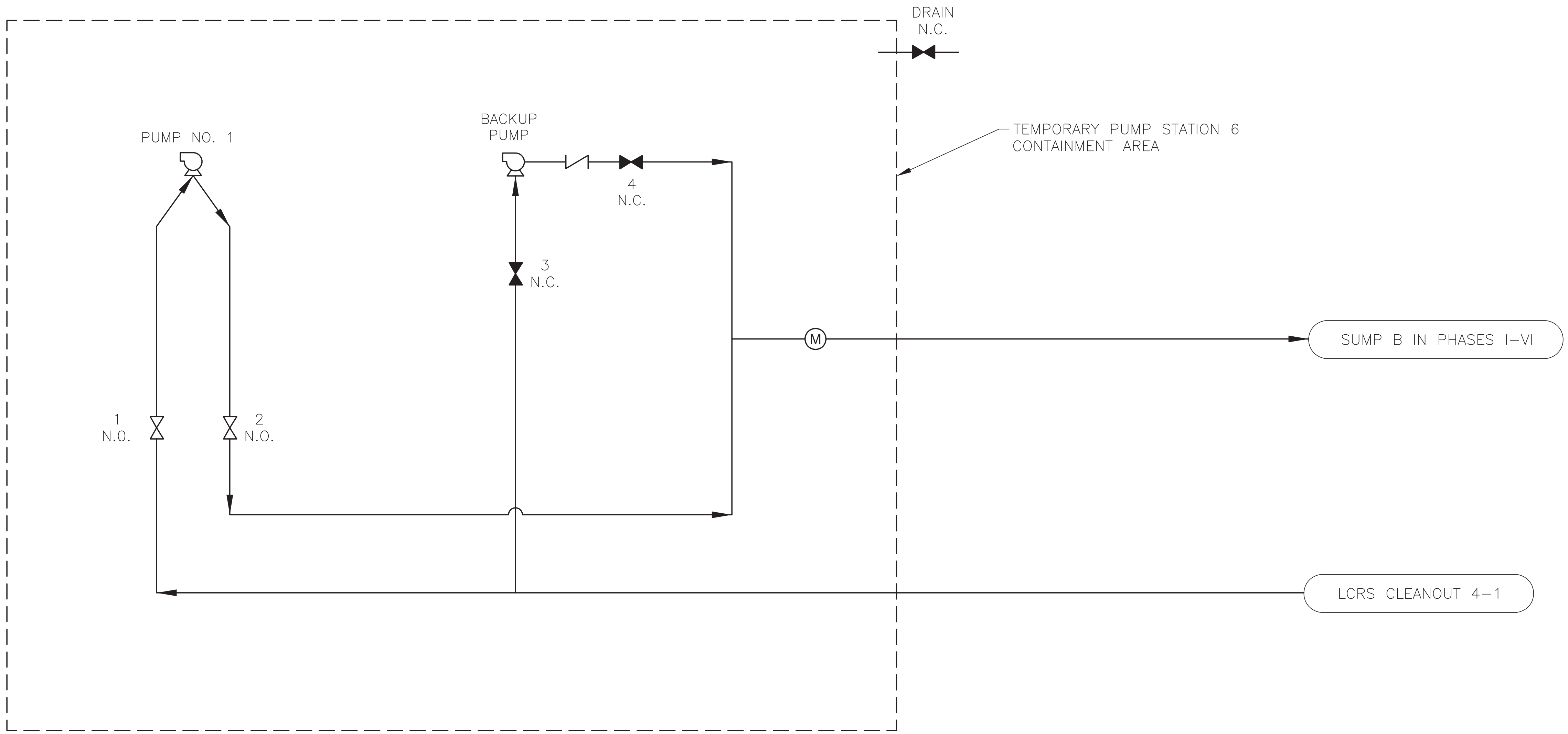
If Pump 1 needs to be repaired or maintained, the mobile backup pump may be used to continue removing leachate from Phase IV. Perform the following when Pump 1 is off and the backup pump is running manually. County personnel will manually start and stop the pump at 7:30 A.M. and 4:30 P.M., respectively.

1. CLOSE Valves 1 and 2.

2. OPEN Valves 3 and 4.

NOTE:

THE SCHEMATIC SHOWN IS NOT TO SCALE AND DEPICTS THE GENERAL CONFIGURATION OF THE PUMP STATION AND DOES NOT REPRESENT THE ACTUAL PIPE SPACING OR LAYOUT.



LEGEND:

- VALVE
- PUMP
- FLOW METER
- CHECK VALVE
- FLOW ARROW
- PIPING
- PUMP STATION BOUNDARY
- N.O. NORMALLY OPEN (WHITE)
- N.C. NORMALLY CLOSED (BLACK)

HDR

TEMPORARY PUMP STATIONS 6
SCHEMATIC

HILLS BOROUGH COUNTY, FLORIDA

FIGURE B-2

OPERATION PROCEDURE FOR SECTION 7 PUMP STATION (PS-7)

Section 7 Pump Station pumps leachate from Sections 7 and 8 to the MLPS.

The standard practice valve settings are as follows:

1. Valves 1 and 2 are OPEN.

If Section 7 needs to be isolated from the MLPS, perform the following:

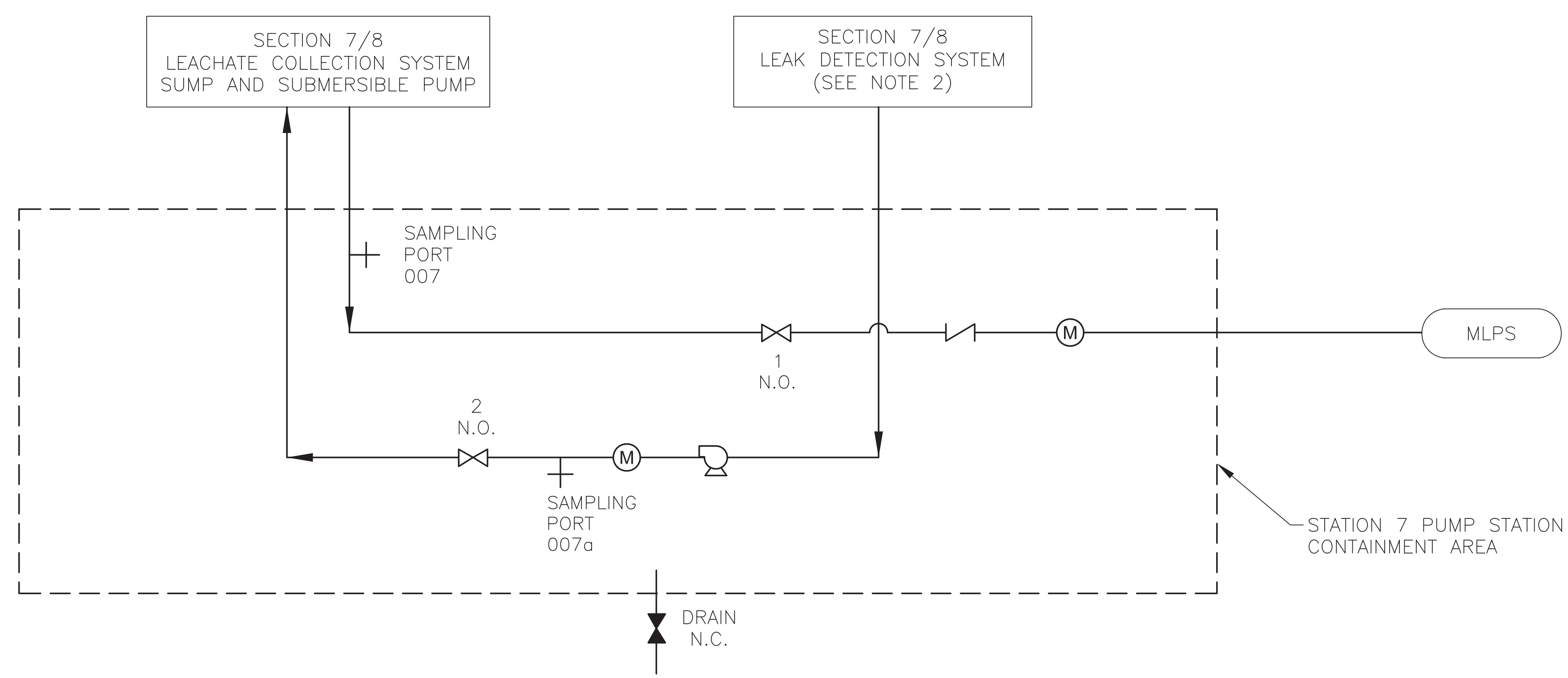
1. CLOSE Valve 1.

Sections 7 and 8 Leak Detection System is currently setup to pump directly into PS-7 Leachate Collection Sump. If the Action Leakage Rate of 1,930 gpd (Section 9.3.3 of the LMP) is exceeded, the Leak Detection System Discharge will be retrofitted to divert the discharge directly into the forcemain heading to the Main Leachate Pump Station.

NOTE:

1. THE SCHEMATIC SHOWN IS NOT TO SCALE AND DEPICTS THE GENERAL CONFIGURATION OF THE PUMP STATION AND DOES NOT REPRESENT THE ACTUAL PIPE SPACING OR LAYOUT.

2. SECTION 7 AND 8 LEAK DETECTION SYSTEM IS CURRENTLY SETUP TO PUMP DIRECTLY INTO PS-7 LEACHATE COLLECTION SUMP. IF THE ACTION LEAKAGE RATE OF 1,930 GDP (SECTION 9.3.3 OF LMP) IS EXCEDED. THE LEAK DETECTION SYSTEM DISCHARGE WILL BE RETROFITTED TO DIVERT THE DISCHARGE DIRECTLY INTO THE FORCEMAIN HEADING TO THE MAIN LEACHATE PUMP STATION.



LEGEND:

- VALVE
- PUMP
- FLOW METER
- CHECK VALVE
- FLOW ARROW
- PIPING
- PUMP STATION BOUNDARY
- N.O. NORMALLY OPEN (WHITE)
- N.C. NORMALLY CLOSED (BLACK)

HDR

SECTION 7 PUMP STATION SCHEMATIC

HILLS BOROUGH COUNTY, FLORIDA

FIGURE B-3

OPERATION PROCEDURE FOR SECTION 9 PUMP STATION (PS-9)

Section 9 Pump Station pumps leachate from Section 9 to the leachate storage tank (T1) at the Leachate Treatment and Reclamation Facility.

The standard practice valve settings are as follows:

1. Valves 1, 2, 3, and 4 are OPEN.

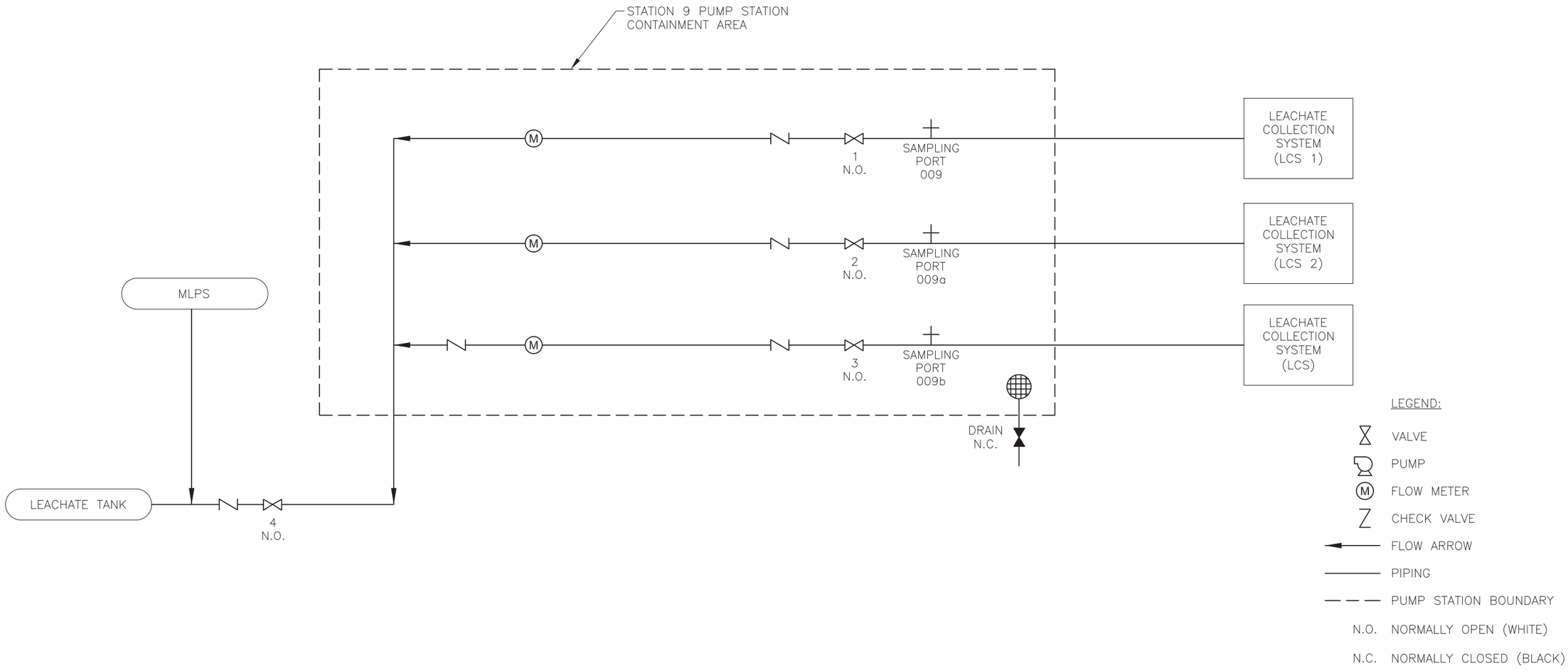
If the Section 9 Pump Station needs to be isolated from the Main Leachate Pump Station, perform the following from the standard practice valve condition above:

1. CLOSE Valve 4.

If the LCS 1, LCS 2, or LDS pumps require repair, they may be isolated by closing Valves 1, 2, or 3, respectively.

NOTE:

THE SCHEMATIC SHOWN IS NOT TO SCALE AND DEPICTS THE GENERAL CONFIGURATION OF THE PUMP STATION AND DOES NOT REPRESENT THE ACTUAL PIPE SPACING OR LAYOUT.



LEGEND:

- VALVE
- PUMP
- (M) FLOW METER
- CHECK VALVE
- FLOW ARROW
- PIPING
- PUMP STATION BOUNDARY
- N.O. NORMALLY OPEN (WHITE)
- N.C. NORMALLY CLOSED (BLACK)

HDR

SECTION 9 PUMP STATION SCHEMATIC

HILLS BOROUGH COUNTY, FLORIDA

FIGURE B-4

C:\Users\kelly\Desktop\2222\Figure A-1.dwg, Figure B-4, 3/11/2013 10:41:15 AM, jkelly

OPERATION PROCEDURE FOR MAIN LEACHATE PUMP STATION (MLPS)

The Main Leachate Pump Station (MLPS) pumps leachate from Sections 7 and 8, Pump Station A (PS-A), and the Truck Loading Area to the leachate storage tank (T1) at the Leachate Treatment and Reclamation Facility (LTRF).

The standard practice valve settings are as follows:

1. Valves 2, 5, 6, 7, 8, 9, 12, 16, 21, and 22 are CLOSED

2. Valves 1, 3, 4, 10, 11, 13, 14, 15, 17, 18, 19, and 20 are OPEN

All of the following conditions begin from the standard practice valve settings shown above.

A. To spray irrigate effluent from Pond A, perform the following:

    1. OPEN Valves 10, 13, 14, and 15 (set under standard practice).

    2. CLOSE Valves 7, 8, 9, and 16 (set under standard practice).

    3. Record the flow meter readings at the irrigation pump.

    4. Start/Stop the irrigation pump manually.

    5. Record the flow meter reading at the irrigation pump.

B. To haul effluent by truck from Pond A, perform the following:

    1. OPEN Valve 9 and ensure Valves 13, 14, and 15 are OPEN.

    2. CLOSE Valve 10 and ensure Valves 7, 8, and 16 are CLOSED.

    3. Record the flow meter readings at the truck loading arm.

    4. Start/Stop the irrigation pump.

    5. Record the flow meter readings at the truck loading arm.

C. If the effluent in Pond A needs to be re-circulated to stabilize the pH, perform the following:

    1. CLOSE Valve 13.

    2. OPEN Valve 16.

D. If Pond B is to be used for storage of effluent from the LTRF and spray evaporation, perform the following:

1. OPEN Valves 1, 3, and 4 (set under standard practice).

2. CLOSE Valves 2, 5, 6, 7, and 22 (set under standard practice).

3. If Pond B reaches its maximum level of 4.4 feet, CLOSE Valve 3. Increase spray irrigation, pond spray evaporation, and hauling as needed.

4. When the effluent in Pond B reaches 3.0 feet deep, as noted on the staff gauge in the pond, the pump for the spray evaporation system may be activated. Manually operate the spray evaporation system and monitor for changing weather conditions (i.e. wind speed greater than 10 mph). Over spraying outside the limits of geomembrane is not allowed.

E. If Pond B is to be used for leachate storage, then perform the following:

1. Notify FDEP and Hillsborough County EPC 24 hours before continuing operation. The notification must include reasons for and the anticipated duration of leachate storage in Pond B.

To empty Pond B of effluent before beginning leachate storage perform the following:

2. CLOSE Valves 1, 3, and 4.

3. OPEN Valves 5 and 6,

4. Ensure Valve 7 is CLOSED,

5. Start evaporation pump at Pond B to pump effluent from Pond B to Pond A.

6. When Pond B is empty, shut of evaporation pump.

7. To fill Pond B with leachate from LTRF go to Step 8 or to fill Pond B with leachate from Pump Station A and Section 7/8 go to Step 11:

To fill Pond B from LTRF perform the following:

8. CLOSE Valves 1, 3, 4, 5 and 6.

9. OPEN Valve 2.

10. When Pond B is full, CLOSE Valve 2. Do not proceed to Step 11.

To fill Pond B from Pump Station A and Section 7/8:

11. CLOSE Valve 11.

12. OPEN Valve 12.

13. When Pond B is full, CLOSE VALVE 12 and OPEN Valve 11.

F. To resume effluent storage and spray evaporation in Pond B after leachate storage, perform the following:

1. CLOSE Valves 10 and 13 and ensure Valve 6 is CLOSED.

2. OPEN Valves 5 and 7 to begin draining Pond B of leachate.

3. To pump leachate to the truck loading station next to Ponds A and B go to Step 4 or to pump to the leachate storage tank (T1) at the LTRF via the MLPS go to Step 7, if the evaporation pump at Pond B is not operational go to Step 10:

To pump leachate to the truck loading station, perform the following:

4. OPEN Valve 9.

5. CLOSE Valve 8.

6. Start the evaporation pump at Pond B and Go to Step 12.

To pump to the leachate storage tank (T1) and LTRF via the MLPS, perform the following:

7. OPEN Valve 8.

8. CLOSE Valve 9.

9. Start the evaporation pump at Pond B. Go to Step 12.

If the evaporation pump is not operational, Pond B can be emptied by connecting a portable pump to Valve 22 and perform the following:

10. CLOSE Valves 4 and 5

11. OPEN Valve 22, Go to Step 12.

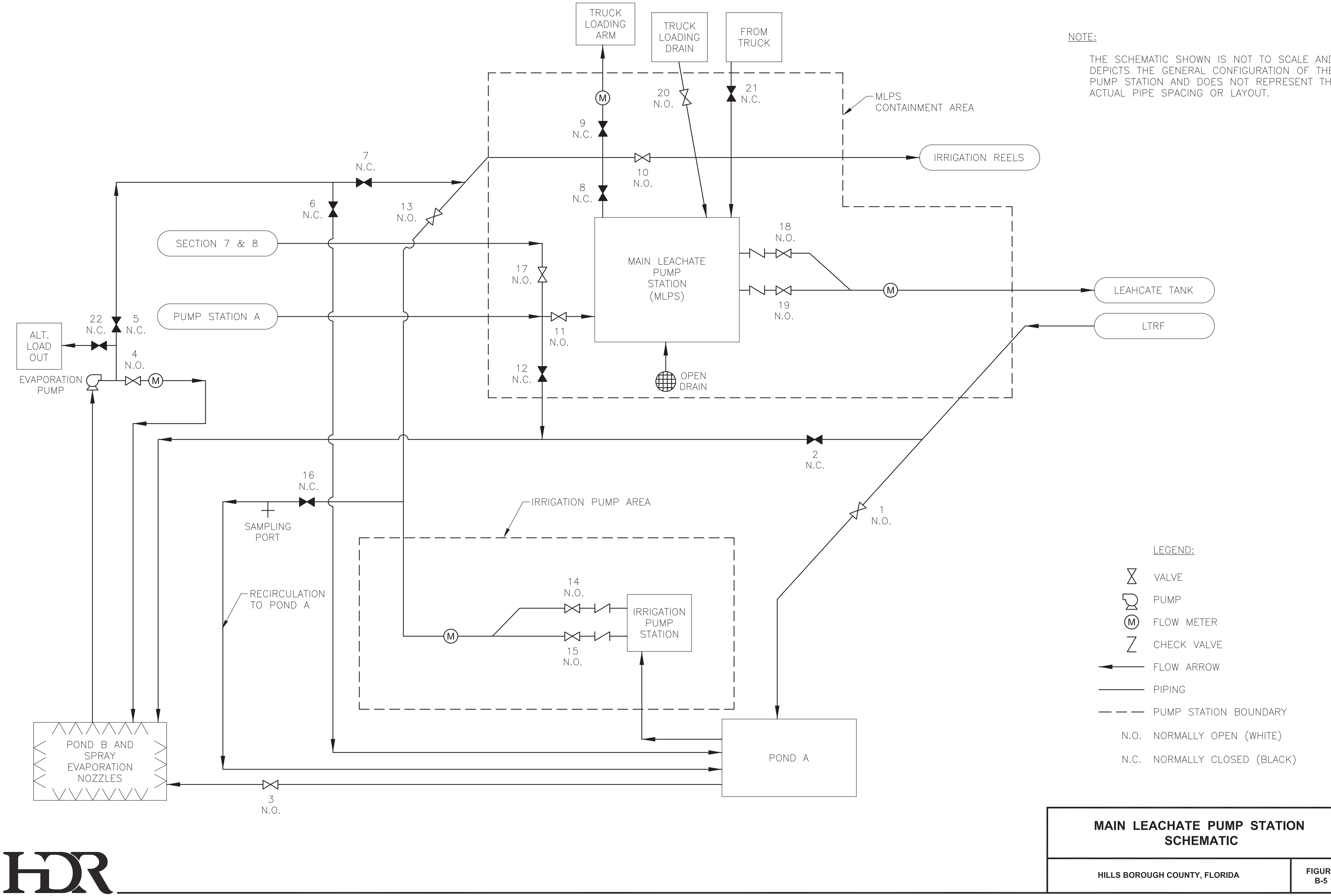
12. When Pond B is emptied, rinse the leachate off the geomembrane using effluent or clean water and pump out the rinse water to the truck loading station to haul off

site as leachate. **Pond B must be cleaned of leachate before effluent storage resumes.** If leachate was pumped from the LTRF, go to Step 13.

13. OPEN Valve 2 and pump out the first 18,000 gallons of effluent to the truck loading arm for off-site disposal as leachate.

14. When all leachate is removed and Pond B is clean, shut off the evaporation pump, and CLOSE Valves 2, 5, 6, and 7.

15. OPEN Valves 1, 3, 4, 10, and 13.



NOTE:

THE SCHEMATIC SHOWN IS NOT TO SCALE AND DEPICTS THE GENERAL CONFIGURATION OF THE PUMP STATION AND DOES NOT REPRESENT THE ACTUAL PIPE SPACING OR LAYOUT.

MAIN LEACHATE PUMP STATION SCHEMATIC

HILLS BOROUGH COUNTY, FLORIDA

FIGURE B-5

OPERATION PROCEDURE
FOR EFFLUENT/LEACHATE STORAGE TANK (T6)

The standard practice operation for the effluent/leachate storage tank (T6) is to receive pumped effluent from the Leachate Treatment and Reclamation Facility (LTRF).

The standard practice valve settings are as follows:

1. Valves 4, 11, 12, 15, 20, 20A, 20B, 21, 22, 24, and 28 are CLOSED

2. Valves 5, 6, 13, 14, 16, 17, 18, 19, 23, 25, 26, 27, 29, and 30 are OPEN

Please note that Valves 1, 2, 3, 7, 8, 9, and 10 are not shown on the attached schematic since they are internal to the operation of the LTRF.

All of the following conditions begin from the standard practice valve settings shown above.

The standard practice for operating the booster pumps is to pump effluent from the effluent/leachate storage tank (T6) to Ponds A and B. Under this standard practice use the following settings:

3. Ensure Valves 18, 19, 24, 25, 26, and 27 are OPEN. Valve 24 is electronically actuated (see Note 1 below).

4. Ensure Valves 21, 22, and 28 are CLOSED. Valve 22 is electronically actuated (see Note 1 below).

If effluent is pumped to the truck loading arm from the effluent/leachate storage tank (T6), then perform the following:

5. Ensure Valve 24 is CLOSED. Valve 24 is electronically actuated (see Note 1 below).

6. OPEN Valve 22 and ensure Valve 23 is OPEN. Valve 22 is electronically actuated (see Note 1 below).

If effluent from the LTRF is pumped directly to Ponds A and B, perform the following:

7. CLOSE Valve 13 and ensure Valve 12 is CLOSED.

8. OPEN Valve 11.

If leachate from the Main Leachate Pump Station (MLPS) must be stored in the effluent/leachate storage tank (T6) while the leachate storage tank (T1) is repaired or inspected, then perform the following:

9. CLOSE Valve 14.

10. OPEN Valve 15.

11. Determine if effluent is to continue to be pumped to the Effluent/Leachate Storage or diverted to Ponds A and B. If pumping effluent to Pond A and B, then go to instructions above for that condition.

If leachate stored in the effluent/leachate storage tank (T6) is to be pumped back to the leachate storage tank (T1) after repairs or inspection, perform the following:

12. OPEN Valves 14 (previously closed in Step 9) and 28, then ensure that Valves 18, 19, 24, 25, and 26 are OPEN. Valve 24 is electronically actuated (see Note 1 below).

13. CLOSE Valves 15 (previously opened in Step 10) and 27, then ensure that Valves 21 and 22 are CLOSED. Valve 22 is electronically actuated (see Note 1 below).

Note 1: Valves 22 and 24 are electronically actuated and controlled by a switch on the Booster Pump control panel at the truck loading station. When the switch is in the "To Ponds" position, Valves 22 and 24 are set in the closed position. Valve 24 will only open in the condition when one or both of the booster pumps are activated. Until the booster pumps are activated Valve 24 will remain closed. When the switch is in the "To Truck" position Valve 22 is set in the open position, Valve 24 is set to the closed position, and the booster pumps are deactivated.

In addition, after the pumps are signaled off, the pumps will run for an additional 30 seconds to allow the system to flush any sulfuric acid from the piping. The electronically actuated valves (22 and 24) are set to close after 60 seconds.

The electronically actuated valves can also be operated using the manual wheel located on the actuator assembly.

The standard practice to remove stormwater from the effluent/leachate storage tank (T6) is as follows:

1. Inspect the tank and piping to ensure there are no leaks. If there are no visible leaks proceed to Step 2. If a leak is observed proceed to Steps 5.

2. If no leaks were observed, OPEN Valve 20 and ensure that Valves 20A and 20B are CLOSED.

3. Start the secondary pump.

4. When stormwater is pumped out of the secondary containment, Stop the secondary pump and CLOSE Valve 20.

5. If a leak was observed, contact supervisor immediately

6. Go to Step 7 to pump liquid to either the leachate storage tank (T1), Ponds A and B, or the truck loading arm. Go to Step 13 to pump liquid via hose to a tanker truck.

7. To pump from the containment area using the secondary pump, OPEN Valves 20A and 21.

8. Ensure Valves 20 and 20B are CLOSED.

9. CLOSE Valve 19 and refer to Step 12 to pump to the leachate storage tank (T1) at the LTRF, to Step 3 to pump to Ponds A and B, or to Step 5 to pump to the truck loading arm for the appropriate valve settings depending on where liquid is to be pumped.

10. Start the secondary pump and the booster pump or truck loading pump.

11. When containment area is pumped down, stop secondary pump and booster pump and OPEN Valve 19.

12. CLOSE Valves 20A and 21. DO NOT PROCEED TO STEP 13.

13. The containment area may also be pumped to a tanker truck on the adjacent road by performing the following:

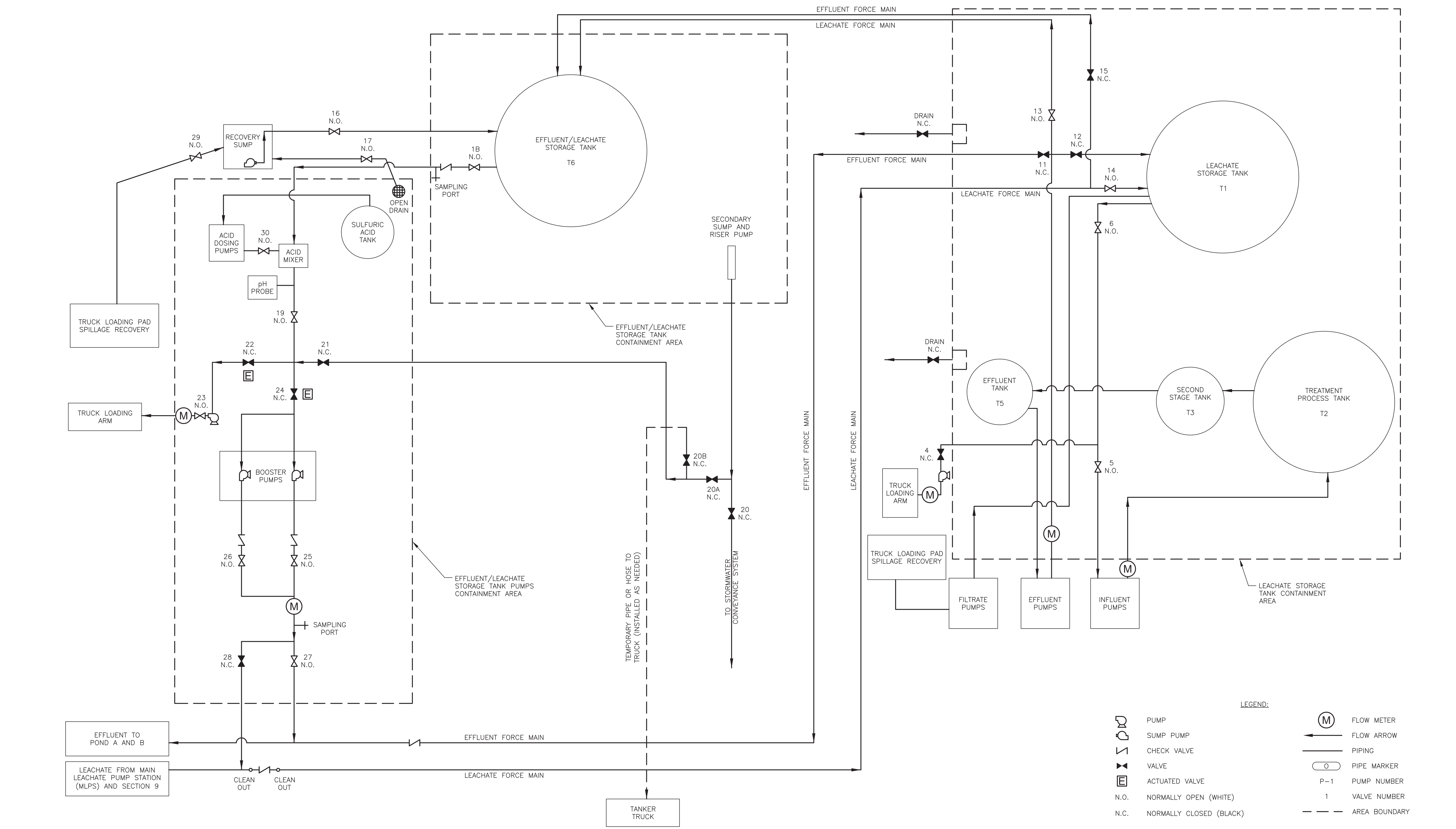
14. Ensure Valves 20 and 21 are CLOSED.

15. OPEN Valves 20A and 20B.

16. Connect a temporary hose to the camlock connector and run hose to tanker truck.

17. Start secondary pump.

18. When containment area is pumped down, stop secondary pump, and CLOSE Valves 20A and 20B.



NOTE:

1. VALVE 1, 2, 3, 7, 8, 9, AND 10 THE METHANOL STORAGE TANK (T4) ARE INTERNAL TO THE OPERATION OF THE LEACHATE TREATMENT SYSTEM AND ARE NOT SHOWN AS PART OF THIS SCHEMATIC.
2. THE SCHEMATIC SHOWN IS NOT TO SCALE AND DEPICTS THE GENERAL CONFIGURATION OF THE PUMP STATION AND DOES NOT REPRESENT THE ACTUAL PIPE SPACING OR LAYOUT.

HDR

LEACHATE AND EFFLUENT / LEACHATE STORAGE TANK SCHEMATIC

HILLS BOROUGH COUNTY, FLORIDA

FIGURE B-6

APPENDIX C

SETTLEMENT DATA FORM

TABLE 1. APPROXIMATE TOP OF CLAY ELEVATIONS
PUMP STATION B SUMP
SOUTHEAST COUNTY LANDFILL

DATE	NW	NE	SE	SW
March 3, 1999	115.65	115.63	115.66	115.62
May 4, 1999	115.63	115.59	115.63	115.58
July 28, 1999	115.49	115.46	115.49	115.45
September 17, 1999[2]	115.59	115.55	115.65	115.56
November 11, 1999	115.44	115.40	115.50	115.31
January 3, 2000	115.31	115.26	115.36	115.17
March 30, 2000	115.39	115.35	115.45	115.26
July 5, 2000[3]	114.85	114.82	114.90	114.71
October 5, 2000	114.83	114.78	114.87	114.67
April 6, 2001	114.35	115.33	114.33	114.29
April 18, 2001[2]	114.15	114.59	114.17	114.07
August 8, 2001	114.34	115.31	114.32	114.28
September 19, 2001[2]	113.78	114.20	113.79	113.69
December 18, 2001	113.63	114.02	113.62	113.52
March 29, 2002	113.22	113.58	113.21	113.10
August 15, 2002 [2]	112.67	113.04	112.64	112.58
February 1, 2003	112.08	112.46	112.04	111.99
May 1, 2003	111.78	112.19	111.80	111.71
September 2, 2003	111.56	111.92	111.54	111.46
December 1, 2003	111.44	111.80	111.42	111.34
April 1, 2004	111.30	111.66	111.29	111.20
July 31, 2004	111.04	111.41	111.04	110.94
December 1, 2004	111.09	111.45	111.10	111.00
March 1, 2005	111.01	111.38	111.02	110.92
June 2, 2005	110.93	111.30	110.95	110.85
October 1, 2005	110.65	111.01	110.65	110.55
February 1, 2006	110.67	111.03	110.69	110.58
June 6, 2006	110.60	110.96	110.63	110.52
October 2, 2006	110.53	110.91	110.59	110.47
February 1, 2007	110.40	110.76	110.43	110.32
June 1, 2007	110.37	110.74	110.41	110.29
September 1, 2007 [2]	110.37	110.74	110.41	110.29
January 2, 2008	110.31	110.72	110.39	110.27
April 1, 2008	110.21	110.63	110.29	110.17
May 8, 2008 [2]	110.33	110.69	110.37	110.25
July 1, 2008	110.13	110.50	110.19	110.06
October 1, 2008	110.01	110.41	110.10	109.97
January 2, 2009	109.84	110.25	109.94	109.82
April 1, 2009	109.79	110.20	109.90	109.77
July 2, 2009	109.71	110.12	109.82	109.69
October 8, 2009	109.68	110.10	109.79	109.67
January 4, 2010	109.63	110.04	109.74	109.61
April 1, 2010	109.59	110.00	109.70	109.58
July 1, 2010	109.56	109.97	109.68	109.55
October 4, 2010	109.50	109.91	109.62	109.49
December 20, 2010	109.51	109.92	109.63	109.50
January 3, 2011	109.49	109.90	109.61	109.47
April 1, 2011	109.46	109.87	109.58	109.45
July 1, 2011	109.45	109.86	109.58	109.44
October 1, 2011	109.44	109.86	109.57	109.44
January 3, 2012	109.44	109.86	109.57	109.44

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Notes:
1. Vertical Datum based on feet NGVD 1929.
2. WMI extended the rods of the settling plates.
3. Benchmarks used in March 30, 2000 survey were found to have settled; elevations shown for July 5, 2000 were tied into new benchmarks.