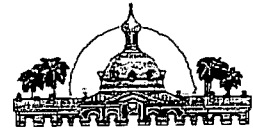


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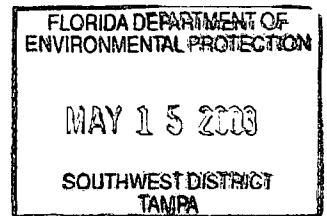
**Leachate Management Plan
Southeast County Landfill (Phases I-VI)
Hillsborough County, Florida**



SCS ENGINEERS

Prepared for:

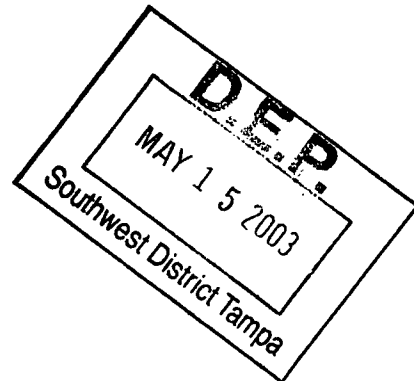
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File No. 09200020.23
May 12, 2003



LEACHATE MANAGEMENT PLAN
SOUTHEAST COUNTY LANDFILL (PHASES I-VI)
HILLSBOROUGH COUNTY, FLORIDA

Presented to:

Hillsborough County
Solid Waste Management Department
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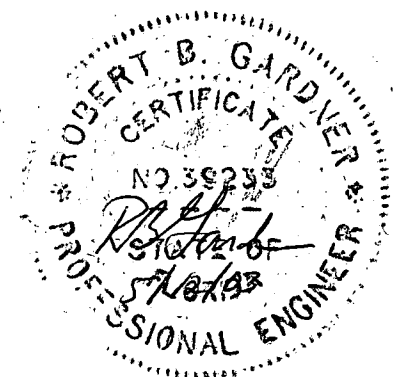


TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1 Introduction.....	1-1
2 Leachate Generation Phases I-VI.....	2-1
3 Leachate Management System Components	3-1
3.1 Leachate Collection and Removal System for Phase I-VI	3-1
3.2 Leachate and Effluent Disposal Systems.....	3-1
3.2.1 Spray Irrigation System On Phases I-VI	3-1
3.2.2 Supplemental Leachate and Effluent Evaporation Via Truck-Mounted Spraying.....	3-4
3.2.3 Supplemental Effluent Evaporation At Pond B.....	3-5
3.2.4 Contingency PS-B Infiltration Basin.....	3-5
3.3 Schedule for Maintenance of the LCRS	3-5
4 System Components Projected Performance	4-1
4.1 Pump Station “A” (PS-A), Capacity 150 GPM.....	4-1
4.2 Pump Station “B” (PS-B), Capacity 150 GPM	4-1
4.3 Main Leachate Pump Station (MLPS), Capacity 240 GPM.....	4-3
4.4 Storage Tank, Capacity 575,000 Gallons	4-3
4.5 Leachate Treatment and Reclamation Facility Average Capacity 60,000 Gallons Per Day.....	4-3
4.6 Effluent Storage Pond (Pond A), Capacity 120,000 Gallons	4-4
4.7 Effluent/Leachate Storage Pond (Pond B), Capacity 236,000 Gallons	4-4
4.7.1 Procedures for Effluent Storage and Evaporation In Pond B	4-4
4.7.2 Procedures for Leachate Storage In Pond B	4-5
4.7.3 Procedures to Resume Effluent Storage and Evaporation in Pond B.....	4-6
4.8 Irrigation Pump Station, Capacity 250 GPM	4-7
4.9 Temporary Pump Station 6 (TPS-6), Capacity 150 GPM.....	4-7
5 Performance Evaluation	5-1
6 Monitoring Phases I-VI.....	6-1
6.1 Leachate Levels	6-1
6.2 Leachate Quality.....	6-2
6.3 Effluent Quality	6-3
6.4 Biosolids Quality and Disposal	6-4

CONTENTS (Continued)

7	Notifications and Spill Countermeasures.....	7-5
7.1	Secondary Containment Spill Countermeasures	7-5
8	References.....	8-5

Attachments

A	Settlement Data Form
B	Facility Inspection and Evaluation Forms
C	Leachate Reporting Forms

FIGURES

<u>Figure</u>	<u>Page</u>
1-1	Leachate Collection System1-2
3-1	Location of Irrigation Sprinkler Reels.....3-3
3-2	PS-B Infiltration Basin3-6
4-1	Leachate Management System Schematic4-2
4-2	Location of Valves.....4-8
5-1	Pore Pressure Versus Depth Relationship at 1.3 Years5-3
5-2	Pore Pressure Versus Depth Relationship at 6.7 Years.5-4
6-1	Piezocene Locations 20026-5

TABLES

<u>Tables</u>	<u>Page</u>
2-1	Estimated Leachate Generation – Phases I - VI with Intermediate Cover, Southeast County Landfill2-2
3-1	Schedule For Maintenance3-7
5-1	Leachate Collection and Removal System Analysis, Southeast County Landfill.....5-2
6-1	Leachate Depths and Quantity Removed6-1

SECTION 1

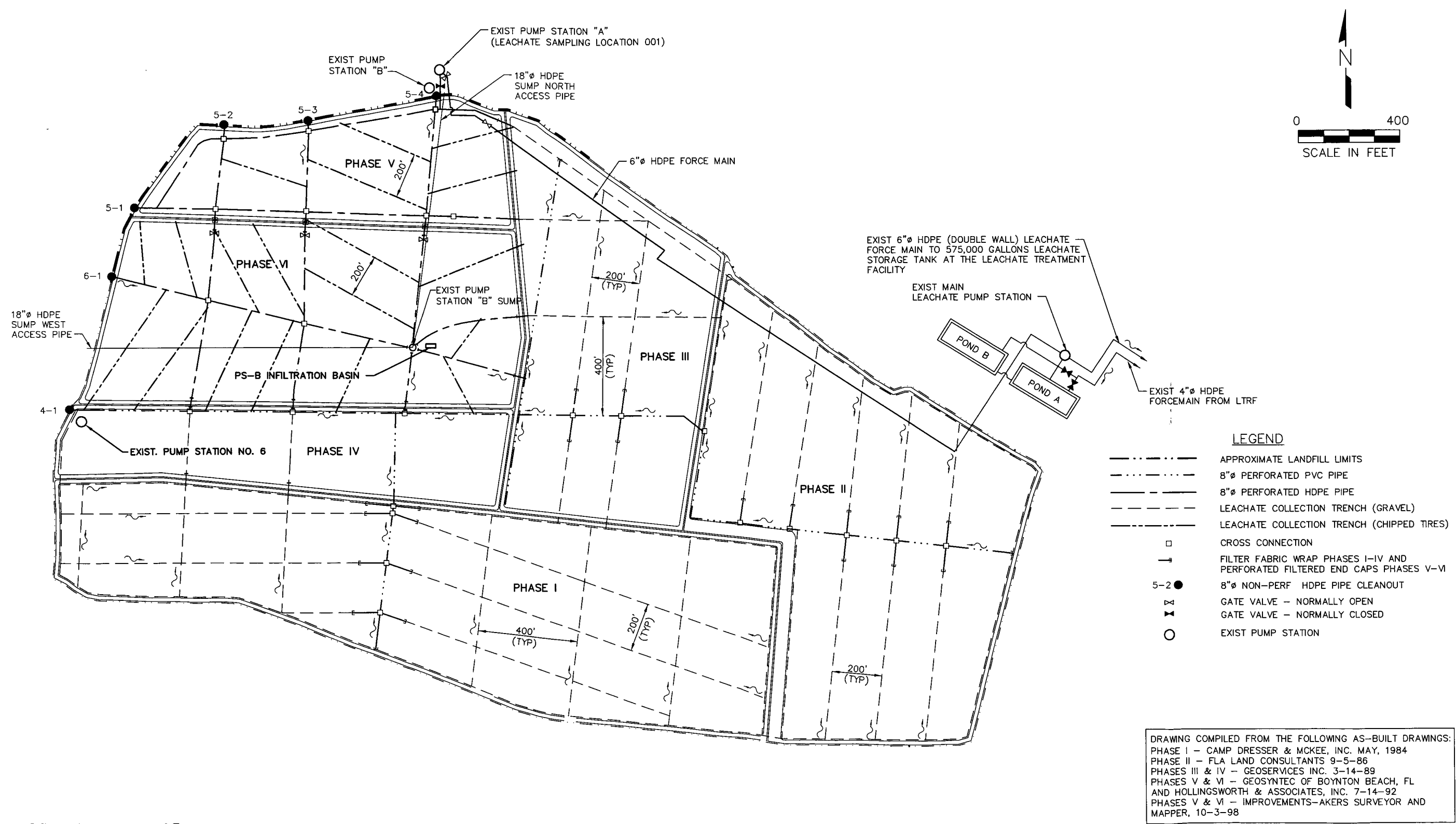
INTRODUCTION

The Leachate Management Plan (LMP) presents the operational, monitoring, and reporting procedures that should be followed by the SWMD at the Southeast County Landfill (SCLF) Phases I-VI to meet the regulatory requirements stipulated in Chapter 62-701, Florida Administrative Code (FAC) relating to leachate management. The objective of the LMP is to remove leachate as it is conveyed to the leachate collection points.

As shown on Figure 1-1, the leachate management system includes the following major components and disposal methods:

- Leachate collection system in Phases I-VI.
 - 8-inch diameter perforated Schedule 80 polyvinyl chloride (PVC) pipes in granite rock filled trenches.
 - 8-inch diameter perforated high-density polyethylene (HDPE) in granite rock filled trenches.
 - Granite rock filled trenches and chipped tire filled trenches.
 - Permanent clean outs around the perimeter of Phases V and VI.
- Collection points:
 - Temporary Pump Station 6 (TPS-6) west of Phase IV.
 - Pump station "A" (PS-A) north of Phase V.
 - Pump station "B" (PS-B) north of Phase V with sump in Phase VI.
 - Main leachate pump station (MLPS) north of Phase II.
 - Contingency PS-B Infiltration Basin.
- Leachate storage tank (575,000 gallons).
- Leachate treatment and reclamation facility (LTRF).
- Effluent Storage Pond (Pond A).
- Effluent/Leachate Storage Pond (Pond B).
- Disposal methods:
 - Treated effluent spray irrigation system.
 - Treated effluent evaporation
 - Tanker trucks hauling to off-site treatment facilities.
 - Truck mounted spray evaporation.

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SCS ENGINEERS

Figure 1-1. Leachate Collection System.

SECTION 2

LEACHATE GENERATION PHASES I-VI

Precipitation falling on a landfill surface will run off, evaporate, evapotranspire, or infiltrate. The percentage of precipitation falling on a landfill surface that will travel each of these paths can be estimated by use of water balance methods. Water balance computations were calculated using the United States Environmental Protection Agency's (U.S. EPA) Hydrological Evaluation of Landfill Performance (HELP) computer model (Schroeder, Payton, McEnroe, and Sjostrom, 1988).

SCS conducted a water balance analysis on the phases to estimate the potential rate of leachate generation. The analysis incorporated climatological variables, landfill geometric variables (e.g., sideslopes), and operational variables (e.g., intermediate and final cover sequencing). The results from the HELP model were provided in Appendix O of the responses to FDEP by SCS dated July 16, 2001 regarding the 2001 Operation Permit Renewal Application.

Operations at the landfill typically include an active 5-acre cell where waste is placed, compacted, and covered daily with initial cover (includes the working face plus other areas with initial cover). Table 2-1 presents the summary of calculated leachate generation for Phases I-VI. SCS estimates that the landfill has the potential to generate an average of 89,600 gallons per day (gpd) of leachate for the 162.4 acre operational area of Phases I - VI, or about 550 gallons per day per acre (gda). Table 2-1 also includes an estimated 50 gda of water generated from the consolidation of the phosphatic clay bottom liner system (Camp, Dresser, & McKee, 1983, p. 3-5), leachate generation resulting from treated effluent spray irrigation of 60,000 gpd, and truck mounted spray evaporation average of 9,700 gpd.

The HELP model was used to analyze the following configurations for the landfill (Phases I-VI).

- Open phase.
- Working face.
- Intermediate soil cover with and without spray irrigation.
- Temporary clay capped slope.
- Geomembrane capping system on a 5 percent slope.

The final configuration, shown on Drawing 14 of the Operating Sequence Drawings dated August 1994 by SCS, was modeled to estimate the leachate generation rate for the top slopes and sideslopes capped with a geomembrane system. Results indicate that an estimated rate of 12,000 gpd can be expected after final closure.

TABLE 2-1. ESTIMATED LEACHATE GENERATION – PHASES I-VI WITH INTERMEDIATE COVER, SOUTHEAST COUNTY LANDFILL

Landfill Phases	Area (ac)	Grass Cover	Soil Cover Type	Waste Height (ft)	Average Leachate Generation Rate	
					(gpd)	(g/d/a)
Intermediate Capped Phases: Spray Irrigation	23.0	Fair	18-inch Intermediate Cover	40	29,600	1,300
Intermediate Capped Phases: No Spray Irrigation	74.4	Fair	18-inch Intermediate Cover	40	10,400	140
Capped Sideslopes (Phases I, I, & III)	23.2	Fair	18-inch Clay Cap	8	3,800	160
Intermediate Fill (Phases V & VI)	37.0	Fair	18-inch Clay Cap	20	6,500	180
Active Cell (Leachate Evaporation)	5.0	Bare	6-inch Initial Cover	10	15,400	1,100
Totals	162.4				65,700	

Notes:

1. Model assumes steady state condition of current conditions.
2. Model includes subsurface flow from compressed clays, estimated at 50 gal/day/ac.
3. Model includes spray irrigation of 60,000 gpd as per specific conditions.
4. Model includes average leachate evaporation of 9,700 gpd.
5. No runoff occurs from the active cells.

SECTION 3

LEACHATE MANAGEMENT SYSTEM COMPONENTS

3.1 LEACHATE COLLECTION AND REMOVAL SYSTEM FOR PHASE I-VI

The layout of the leachate collection and removal system (LCRS) is presented in Figure 1-1.

3.2 LEACHATE AND EFFLUENT DISPOSAL SYSTEMS

The SWMD disposes of leachate and treated effluent at two of the County wastewater treatment plants. Tanker trucks (both County and private contract fleets) are used to transport the leachate from the SCLF to the treatment plants. A small quantity of leachate average of 9,700 gpd will be evaporated in the active landfill cell area using truck-mounted sprayers. When the on-site treatment plant is operational, effluent also will be disposed through spray irrigation pursuant to the current Phases I-VI operation permit. Leachate and effluent quantities are measured with flow meters.

3.2.1 Spray Irrigation System on Phases I-VI

The SWMD operates a mobile irrigation system consisting of two irrigation reels manufactured by ABI Irrigation, Model ABI 90 AT 1250 (Maximum capacity 390 gpm). The mobile irrigation reels currently are stationed on the west side of Phase I and on the east side of Phase II as shown on Figure 3-1. Only treated effluent will be disposed through the spray irrigation system.

The operational sequence of the mobile reel irrigators will be as follows:

- Before each irrigation event, the medium density polyethylene (PE) hose is stretched out with a vehicle (approximately 1,200 linear feet). This activity takes approximately 30 minutes per day.
- Once both PE hoses have been stretched out across the top of the landfill, personnel manually turn on the irrigation pump; one pump if the reels are operated sequentially or concurrently. The reels automatically reel back the PE hose at a preset rate (i.e., 650 feet per hour).
- At the end of the irrigation event, personnel manually turn off the irrigation pump and the irrigation reels automatically return to their original position.

Spray irrigation will occur under the following conditions:

- Spray irrigation at a rate of 0.10 inch per application followed by two hours (waiting period) between each application for a maximum of 0.30 inch per day of effluent. Under no circumstances will effluent be allowed to discharge as runoff to adjacent stormwater systems or conveyance ditches. Effluent will not be sprayed during 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 will take place only when rainfall runoff into the onsite retention areas down gradient from the spray areas has terminated for 2 hours based on daily inspections of the influent point to each related retention area, or as follows, whichever is more restrictive:

- At least 4 hours after a rainfall of 3/4 inches or less, or
- At least 24 hours after a day of rainfall of 3/4 inches to 2-1/2 inches, or
- At least 48 hours after a day of rainfall of 2-1/2 inches or greater
- Spray irrigation of effluent will not be conducted within 100 feet of the landfill liner trench, on slopes steeper than 10 percent, nor on areas with permanent final cover.
- Spray irrigation of treated effluent will be conducted between the hours of 8:00 a.m. to 4:00 p.m.

The Leachate Reporting Forms (Appendix C) will continue to be completed monthly and submitted at least quarterly to the FDEP and EPC by the 15th of January, April, July, and October of each year. As minimum, the following data will be recorded daily:

- Effluent sprayed in gal/day.
- Rainfall onsite in inches/day and time of day.
- Observed runoff influent to retention areas as (yes/no) time of day of inspection.

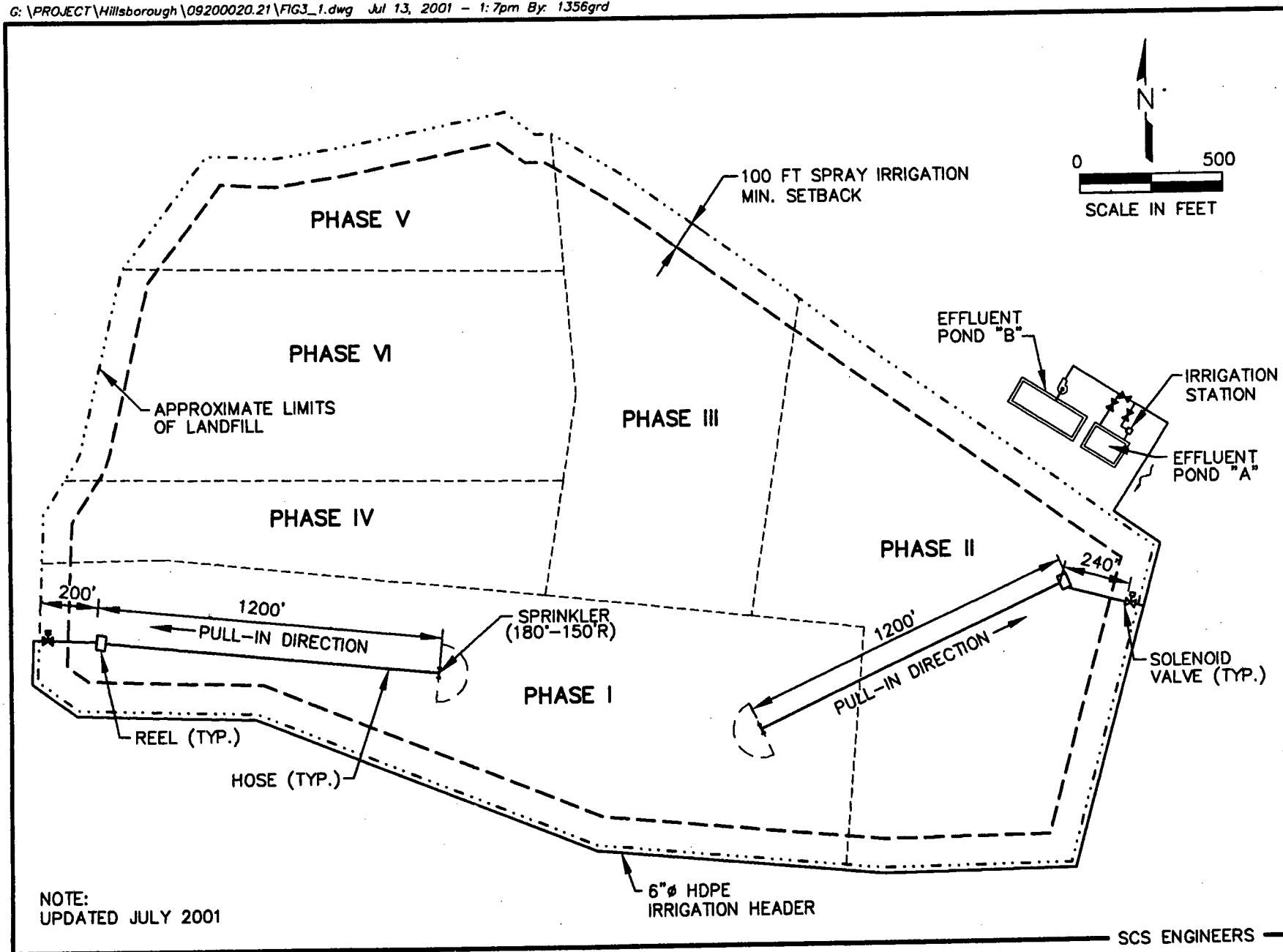


Figure 3-1. Location of Irrigation Sprinkler Reels.

3.2.2 Supplemental Leachate and Effluent Evaporation via Truck-Mounted Spraying

Evaporation will be employed as a supplemental method to dispose 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 SWMD will monitor 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 will be applied under the following conditions:

- Leachate will only be sprayed on active-fill areas, including the working face, and areas with the required 6 inches of initial cover.
- Leachate will not be 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 will be controlled to prevent leachate runoff from entering the stormwater system.
- Leachate will not be sprayed during a rainfall event.
- 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. It is evaporation that is the main goal of this leachate disposal method, rather than the actual recirculation of leachate.
- Leachate will not be sprayed at the end of the day on the initial cover of the working face or other areas. Spraying should be done early in the morning after any dew evaporates and continue until early afternoon or until all available areas have been utilized.

The SWMD will continue evaporating leachate and effluent in full conformance with Chapter 62-701, FAC. The SWMD will continue to notify the FDEP of all evaporated quantities in the monthly water balance reports.

3.2.3 Supplemental Effluent Evaporation at Pond B

Supplemental effluent evaporation is provided by a 0.6-acre, 236,000-gallon effluent/leachate storage pond, which is referred to as Pond B, adjacent to the existing effluent storage pond (Pond A). Pond B is designed with an upper and a lower 60-mil HDPE geomembrane. An HDPE geonet is 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 cleared of vegetation and graded. A spray evaporation system is designed around the perimeter of the pond. The spray evaporation system consists of 30 nozzles, with an estimated flow capacity of 17 gallons per minute per nozzle and a 510-gallon per minute pump.

The operational constraints associated with the spray evaporation system are discussed in Section 4.7. In general, the SWMD will operate the system manually, and only during the hours the landfill is open. The spray evaporation system will not be operated during windy conditions (i.e., over 10 miles per hour) to prevent overspray outside to limits of the pond liner system.

3.2.4 Contingency PS-B Infiltration Basin

In order to facilitate efficient management of leachate runoff during heavy rainfall from the active disposal area, to improved the infiltration rate an infiltration basin in the vicinity of Pump Station B (PS-B) is designed in a tire chips trench 10 feet wide by 30 feet long and 20 feet deep, covered with 6-inch thick sandy cover, surrounded by a 3-foot high clayey soil interceptor berm to avoid intrusion of stormwater and contain the leachate (see Figure 3-2). Permanent markers will be maintained along the tire chip trench.

An interceptor berm is maintained in front and around of the active disposal area to prevent leachate from mixing with stormwater. During heavy rainfall events, the bermed area in front of the active disposal area may fill with leachate runoff from the working face. To prevent leachate from seeping or breaching through the interceptor berm, the excess leachate will be pumped from the bermed area to the PS-B Infiltration Basin. Leachate within the basin will infiltrate into the PS-B sump where subsequently it will be removed from the landfill through Pump Station B.

Leachate will not be pumped to the PS-B Infiltration Basin at a rate or in quantities that will cause runoff outside the berm of the basin or cause an increase in the depth of leachate above 24 inches in the PS-B Sump. All pumping to the PS-B Infiltration Basin will be noted on the daily logs.

3.3 SCHEDULE FOR MAINTENANCE OF THE LCRS

Maintenance of the LCRS will be conducted on an as-needed basis. The routine maintenance for the LCRS of Phases I-VI and related components at the SCLF will be performed following the schedule in Table 3-1.

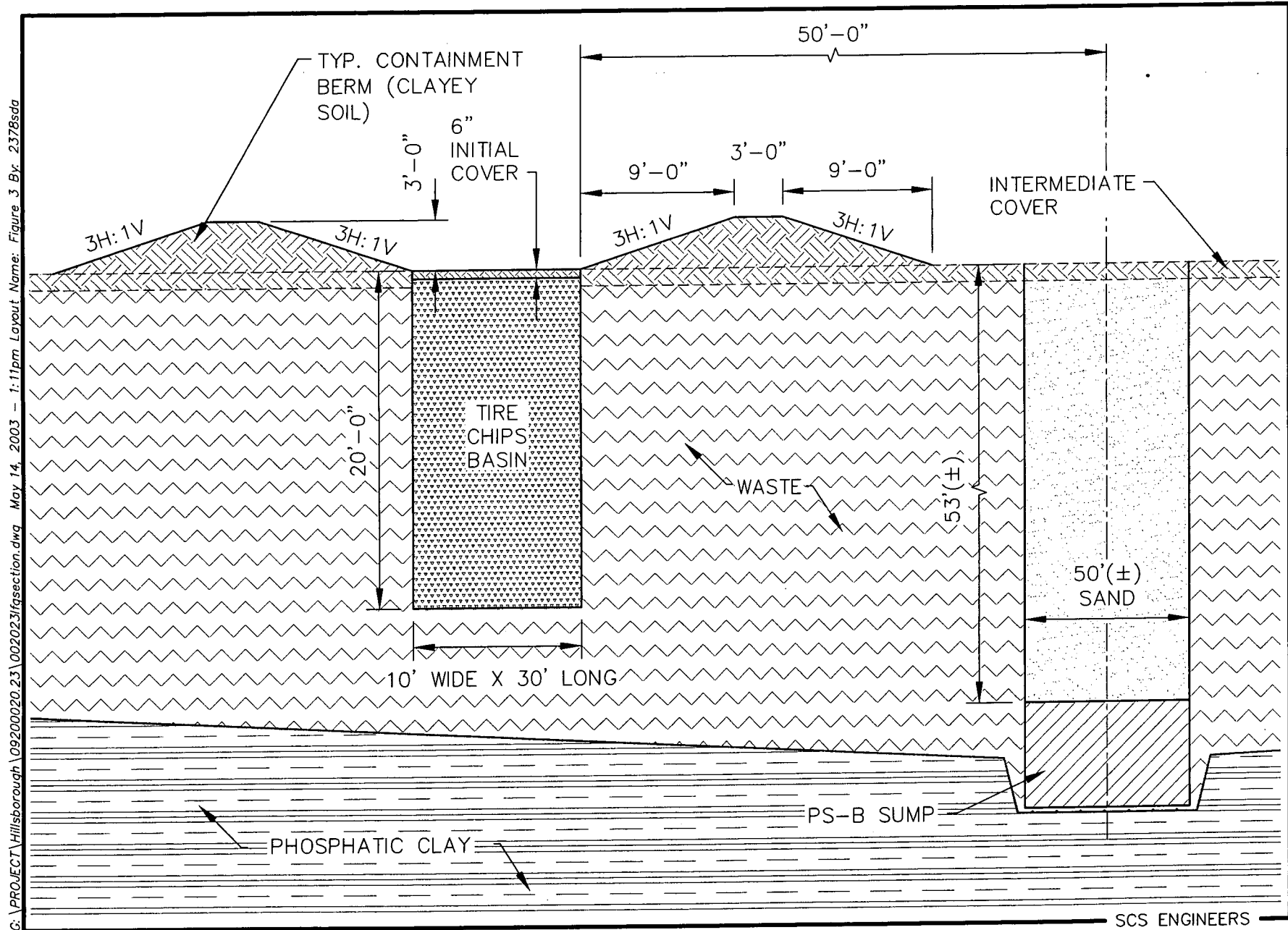


Figure 3-2. Tire Chips PS-B Infiltration Basin Cross-Section.

TABLE 3-1. SCHEDULE FOR MAINTENANCE

Component	Frequency	Performance Criteria	Corrective Action
Pump Station A (PS-A)	Pump: semi-annual. Sump: annual.	If pumping rate is less than 120 gpm, conduct drawdown or pressure test. Inspect for sediment in sump and adequacy of level controls by testing the automatic on/off float settings (see LMP Section 4.1 for PS-A float settings).	Pump with reduced performance will be removed and repaired. Replacement pump will be installed within 8 hours. If PS-A cannot be repaired within 8 hours, the by pass 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 24 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.	If pumping rate is less than 120 gpm, conduct drawdown or pressure test. 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 4.2 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 with reduced performance will be removed and repaired. Replacement pump will be installed within 8 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 at time of permit renewal. If the 18-inch access pipes are not performing adequately, the SWMD will submit to the FDEP and EPC an evaluation report with proposed remedy.
Main Leachate Pump Station (MLPS)	Pump: semi-annual. Sump: annual.	If pumping rate is less than 200 gpm, conduct drawdown or pressure test. 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 with reduced performance will be removed and repaired. Replacement pump will be installed within 8 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 24 hours. Excessive sediment in the sump will be removed within two weeks after inspection.
Temporary Pump Station 6 (TPS-6)	Pump: semi-annual.	If pumping rate is less than 120 gpm, conduct drawdown or pressure test. 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 4.9 for TPS-6 sensor settings). If blockage of the 4-inch suction line or the bubbler pressure tube is suspected, remove the suction line for inspection.	Pump with reduced performance will be removed and repaired. 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 4-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 prior to re-using 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 prior to re-using the pond.
Storage Tank	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 on failure of the tank, or leaks will be corrected prior to re-using the tank. For level controls failure remedial measures will be initiated immediately by contacting an electrician and the condition will be corrected within 24 hours.
Leachate collection and removal system	Twice during permit period.	Water pressure clean or video inspect at the existing cleanout locations.	If any component is not performing adequately, the SWMD will submit to the FDEP and EPC an evaluation report with proposed remedy.

SECTION 4

SYSTEM COMPONENTS PROJECTED PERFORMANCE

A schematic of the leachate management system is shown on Figure 4-1. The LCRS removal rates, pump rates, and pump control settings are as follows:

4.1 PUMP STATION "A" (PS-A), CAPACITY 150 GPM

PS-A consists of an 8-foot inside diameter below-grade concrete sump with a single submersible pump. The discharge from PS-B is conveyed to PS-A. From PS-A, leachate is conveyed to the Main Leachate Pump Station 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.

In the event that a high level condition occurs, the PS-A sump control panel will shut down PS-B. It will also transmit a signal, via a transceiver, with the sump condition to the control computer in the Leachate Treatment and Reclamation Facility (LTRF) and the landfill administration office (Office). 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.

4.2 PUMP STATION "B" (PS-B), CAPACITY 150 GPM

PS-B sump (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 leachate collection and removal system 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 with a single self-priming aboveground pump station (north of Phase V). The vault has two HDPE 18-inch diameter horizontal access pipes, the main access pipe leading to PS-A and an alternate access pipe leading towards the western perimeter of the landfill. PS-B conveys leachate to PS-A. The "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 LCRS, thereby maximizing the LCRS performance.

The primary pump used to remove leachate from the PS-B sump is a vacuum assisted Goulds Model 3657. The self-priming pump has a capacity of 150 gallons per minute (gpm). In the event of primary pump failure, the SWMD has stored on site an Acme-Sykes Model GP100 vacuum-assisted diesel pump that may be used as backup. The GP100 or an equal pump system will be on line within 8 hours. PS-B sump is equipped with a level indicator located at the control panel near PS-A and the SWMD monitors the level on a daily basis to ensure that the levels noted above 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.

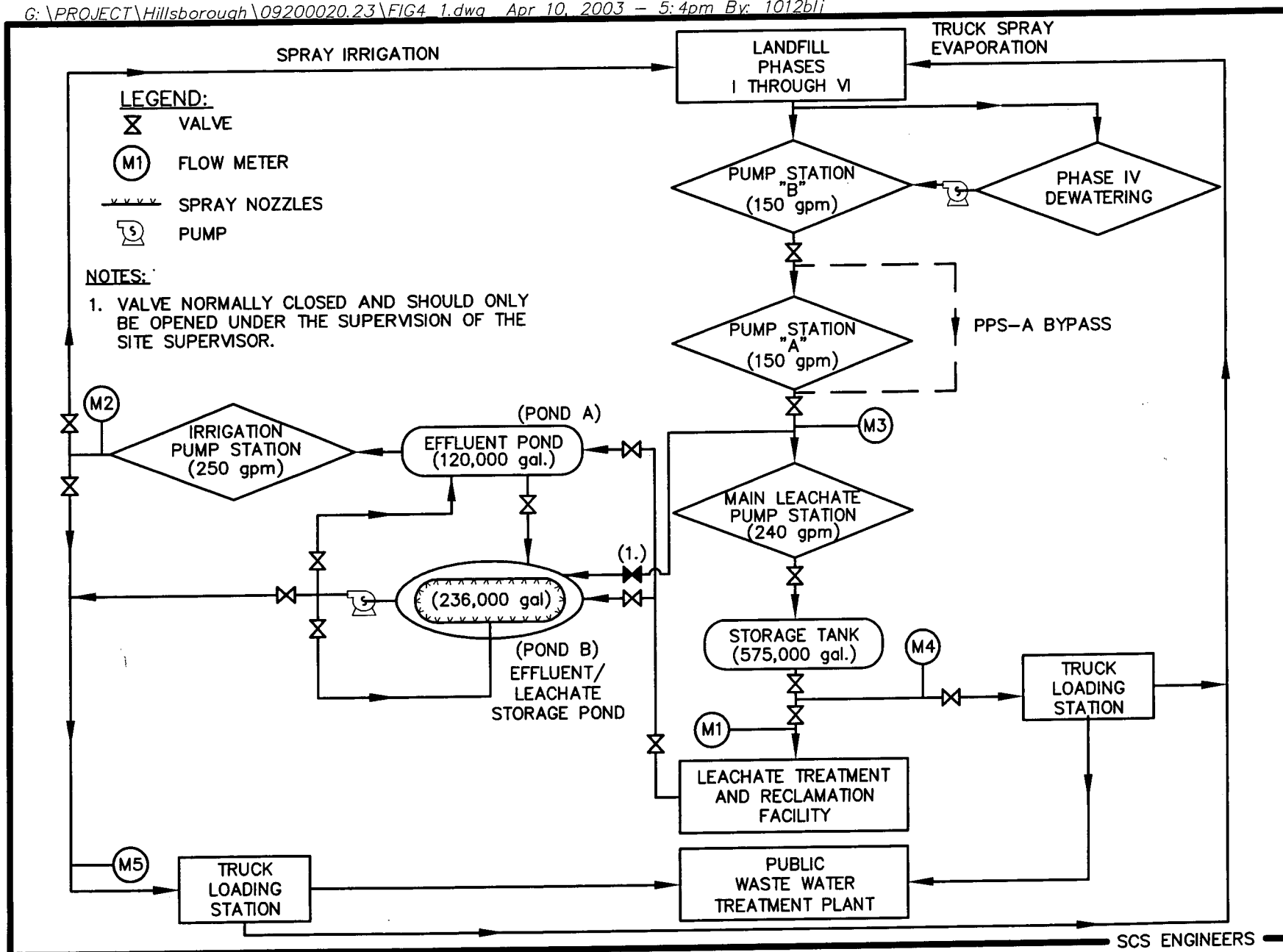


Figure 4-1. Leachate Management System Schematic.

4.3 MAIN LEACHATE PUMP STATION (MLPS), CAPACITY 240 GPM

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). From the MLPS, leachate is conveyed to the 575,000-gallon storage tank at the on-site LTRF. The pump in operation is set for a 24-hour operation cycle with the "on" float at 4 feet from the sump bottom and the "off" float at 2 feet from the sump bottom.

In the event that a high level condition occurs at the MLPS sump, the control panel will shut down 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 and the Office.

4.4 STORAGE TANK, CAPACITY 575,000 GALLONS

The leachate level in the aboveground storage tank (AST) is maintained to provide for the maximum storage capacity possible. The AST is maintained with an average low level of 6 feet or 173,000 gallons (3 days storage) to ensure enough leachate is available for the LTRF to operate without interruptions. When levels below 6 feet are reached in the AST, leachate hauling and spray evaporation will be temporarily reduced or stopped. Similarly, an action level is established for high level of 11 feet (316,000 gallons) in the AST. A level of 11 feet provides for a remaining storage capacity in the AST 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.

In the event that a high level alarm condition occurs (at 16.5 feet) in the AST, the LTRF continues to operate, and the MLPS and the LTRF filtrate pumps will be shut down. A signal with the AST condition will be sent to the control computer in the LTRF and the Office.

4.5 LEACHATE TREATMENT AND RECLAMATION FACILITY AVERAGE CAPACITY 60,000 GALLONS PER DAY

In December 1994, the SWMD constructed an on-site leachate treatment and reclamation facility (LTRF). The LTRF consists of a PACT carbon activated treatment system. The LTRF system and operation is described in detail in the following document:

- General Process and Operation Manual for the Pact Leachate Treatment System, Volume III, prepared by Zimpro Environmental, Inc dated March 1994.

Once the leachate has been treated, it will be pumped through a 4-inch diameter single-walled HDPE pipe to the treated effluent holding basin (Pond A described below). From Pond A, the treated effluent will be pumped through the spray irrigation system and used to water the areas of Phases I-VI with fair grass cover that have not received final cover. In addition, the effluent can gravity flow into Pond B where it will be spray evaporated. Excess treated effluent is transported to two off-site County wastewater treatment plants.

4.6 EFFLUENT STORAGE POND (POND A), CAPACITY 120,000 GALLONS

The effluent storage pond (Pond A) receives treated leachate (effluent) from the LTRF. The pond is lined with 80-mil HDPE and provides for temporary effluent storage of 120,000 gallons plus 2' feet of freeboard. Using the existing staff gage in the pond, Pond A will be maintained at a maximum depth of 4.5 feet (elevation 137.0) and a minimum depth of 6 inches. Effluent evaporation on the landfill, Pond B evaporation, or off-site hauling will increase if levels in Pond A reach the maximum level of 4.5 feet during times when irrigation is not allowed. Similarly, if levels are below 6 inches then the irrigation, evaporation, and off-site hauling will be temporarily reduced.

4.7 EFFLUENT/LEACHATE STORAGE POND (POND B), CAPACITY 236,000 GALLONS

The effluent/leachate storage pond (Pond B) will provide an additional storage volume of 236,000 gallons. The pond is designed with one foot of storage for the 25-year, 24-hour storm and two feet of freeboard. The pond is designed to store either raw leachate or effluent from the LTRF. However, Pond B primary use will be for additional storage of effluent from the LTRF. **If the need for leachate storage arises, the SWMD will provide notification to the Florida Department of Environmental Protection (FDEP) prior to use of the pond for leachate storage. The prior notification will include reason(s) for leachate storage in the pond and the projected duration.**

4.7.1 Procedures for Effluent Storage and Evaporation in Pond B

Under normal operations, Pond B will be used for effluent storage and evaporation, the following valve settings and activities are needed (See Figure 4-2.):

1. To fill the empty Pond B with effluent, Valve P-1 remains open.
2. Open Valve P-3 to allow gravity flow from Pond A into Pond B.
3. Open Valve P-4 to allow spray evaporation in Pond B.

When the effluent in Pond B reaches three feet in depth, as noted on the staff gauge in the pond, the pump for the spray evaporation system may be activated. The spray evaporation system will only be operated manually and will be monitored for changing weather conditions. Overspray outside the limits of geomembrane will not be allowed.

The spray evaporation system will only be operated during the hours the landfill is open. Using the staff gauge in the pond, Pond B is maintained at a maximum depth of 3.6 feet allowing two feet of freeboard.

If Pond B reaches the maximum level of 3.6 feet, valve P-3 will be closed, and spray irrigation, pond evaporation and hauling will be increased.

4.7.2 Procedures for Leachate Storage In Pond B

If leachate storage is required, the following activities and valve settings will be needed (See Figure 4-2):

1. Notify FDEP and EPC 24 hours prior. The notification must include reason(s) and projected duration.
2. Drain Pond B of effluent following steps 3 through 7 below. **All Steps 3 through 7 must be completed prior to filling Pond B with leachate.**
3. Close Valve P-1.
4. Close Valve P-3.
5. Close Valve P-4.
6. To pump the effluent back to Pond A,
 - (1) Open Valve P-5
 - (2) Open Valve P-6
 - (3) Start the evaporation pump at Pond B.
7. When Pond B is empty (6 inches depth on the bottom of the pond),
 - (1) Shut off the evaporation pump
 - (2) Close Valve P-5
 - (3) Close Valve P-6
- 8a. To fill Pond B with leachate coming from the LTRF, open Valve P-2.
- 8b. To fill Pond B with leachate coming from the landfill, close Valve P-11 and open Valve P-12.
9. When Pond B filling is completed (staff gauge depth of 3.6 feet or less)
 - (1) Close Valve P-2
 - (2) Open Valve P-11
 - (3) Close Valve P-12

Maximum leachate depth in the pond is 3.6 feet. If Pond B reaches the maximum level of 3.6 feet, off-site hauling will be increased. **Spray evaporation of leachate is not allowed.**

4.7.3 Procedures to Resume Effluent Storage and Evaporation in Pond B.

Before Pond B is used again for effluent storage and evaporation, the following valve settings and activities are needed (See Figure 4-2):

1. Drain Pond B of leachate following steps 2 through 8 below.
2. Close Valve P-10
3. Close Valve P-13.
4. Open Valve P-5.
5. Open Valve P-7.
- 6a. To pump leachate to the truck loading station,
 - (1) Open Valve P-9
 - (2) Close Valve P-8
 - (3) Start the evaporation pump at Pond B.
- 6b. To pump leachate to the 575,000-gallon tank,
 - (1) Open Valve P-8
 - (2) Close Valve P-9
 - (3) Start the evaporation pump at Pond B.
7. Pond B must be cleaned of leachate prior to resuming effluent storage. Before filling the pond with effluent, rinse the leachate off the geomembrane using effluent or clean water and pump out the rinse water to the truck loading station to be hauled off site as leachate. If the leachate was pumped from the LTRF, then open Valve P-2 and also pump out the first 18,000 gallons of effluent to the truck loading station to be hauled off site as leachate.
8. When Pond B is clean and empty (all leachate evacuated),
 - (1) Shut off the evaporation pump
 - (2) Close Valves P-2, P-5, and P-7.
9. Open Valves P-1, P-3, P-10, and P-13.
10. Open Valve P-4. Resume normal operation per Section 4.7.1.

4.8 IRRIGATION PUMP STATION, CAPACITY 250 GPM

The 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 irrigation pump station, effluent is conveyed to the spray irrigation system on the landfill. The pump in operation will be set manually depending on weather conditions.

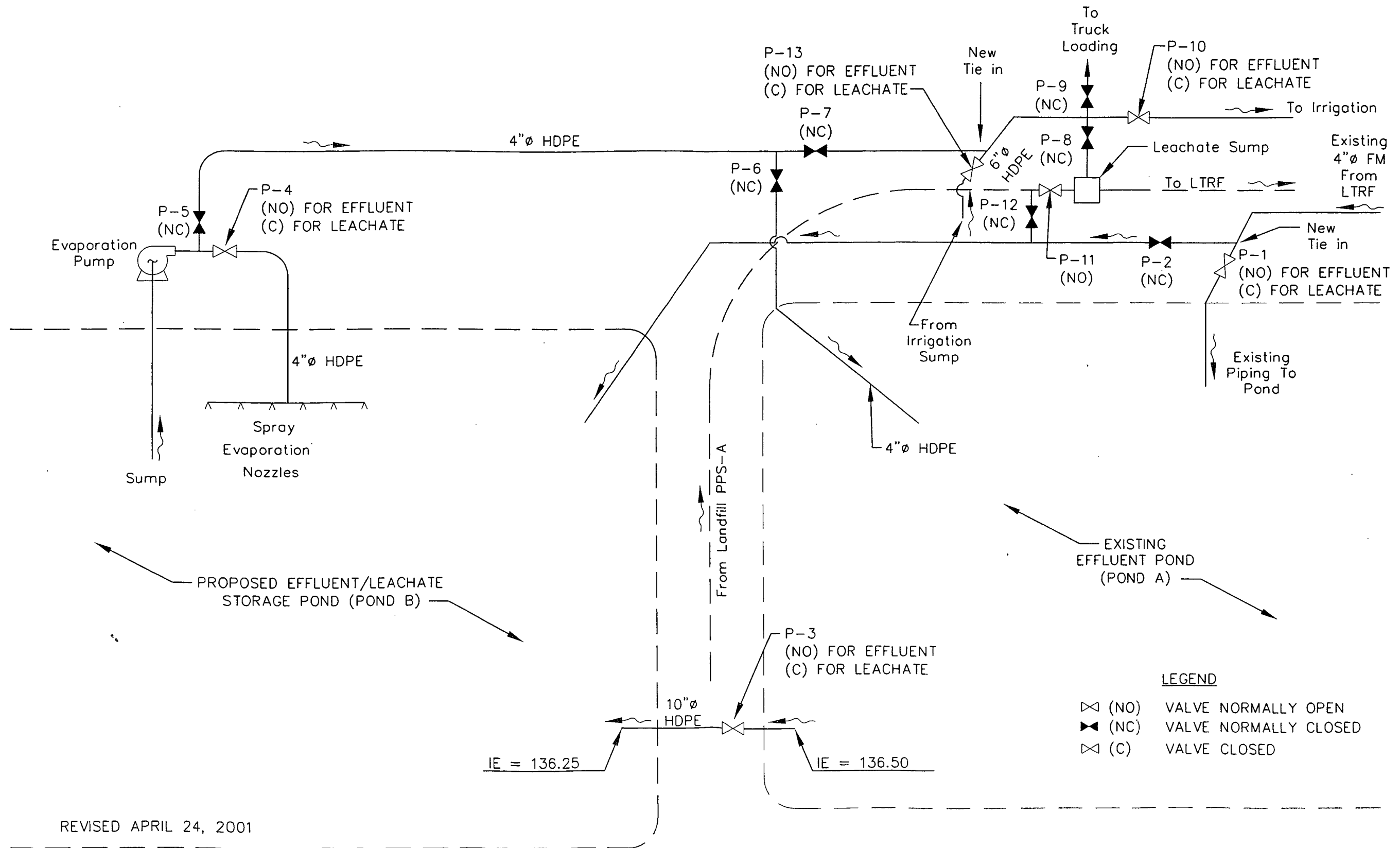
In the event that a high level condition occurs in the irrigation pump station sump, the LTRF continues to operate, and the effluent/influent pumps at the LTRF will be shut down. A signal with the sump condition will be sent to the control computer in the LTRF and the Office.

4.9 TEMPORARY PUMP STATION 6 (TPS-6), CAPACITY 150 GPM

TPS-6 consists of an above ground pump station to remove leachate from the Phase IV 8-inch diameter header line connected to cleanout 4-1 (see Figure 1-1). The leachate will be removed via a 3-inch diameter HDPE suction line that is inserted 600 feet into the 8-inch header. TPS-6 conveys leachate to PS-B through the west 18-inch diameter access pipe via a 4-inch diameter HDPE force main. TPS-6 will operate continuously, thereby maintaining a level of 3 inches within the header pipe.

The primary pump that will be used is an electrical skid mounted vacuum assisted Sykes GP100. The self-priming pump has a capacity of 150 gallons per minute (gpm). In the event of primary pump failure, the SWMD has stored on site an Acme-Sykes Model GP100 vacuum-assisted diesel pump that may be used as backup. The GP100 or an equal pump system will be on line within 48 hours. The SWMD will monitor the flow on a daily basis to ensure that the levels noted above are maintained. Maintaining the operation of TPS-6 as proposed will provide reasonable assurance that leachate storage within Phases IV and VI is minimized. TPS-6 will remain in operation until the elevation of the PS-B Sump settles further and becomes lower than the elevation in this area such that the leachate from Phases I, IV, and VI can gravity flow into the PS-B sump.

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REVISED APRIL 24, 2001

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Figure 4-2. Location of Valves

SECTION 5

PERFORMANCE EVALUATION

The governing criteria of the LCRS is that it must maintain leachate levels at or below the levels required by Section 62-701.400(3), FAC, the operation permit, and as required by this Leachate Management Plan. Leachate levels in a landfill are a function of the impingement rate (e), the leachate travel distance (L), slope of the liner ($\tan\beta$), and the hydraulic conductivity of the drainage layer (k) (Giroud, 1992). The equation to estimate the leachate head over the liner, in the absence of pore pressure, is as follows:

$$T_{\max} = \frac{CL [(4e/k + (\tan \beta)^2)]^{1/2} - \tan \beta}{2\cos \beta}$$

Where:

T_{\max}	=	Maximum head over liner (inches)
L	=	Length of horizontal projection of the leachate collection layer from top to collector (meters)
e	=	Impingement rate (meter/sec)
k	=	Saturated hydraulic conductivity of the drainage layer (m/sec)
$\tan\beta$	=	Slope to collection pipe (dimensionless)
C	=	Constant (39.37 inch/meter)

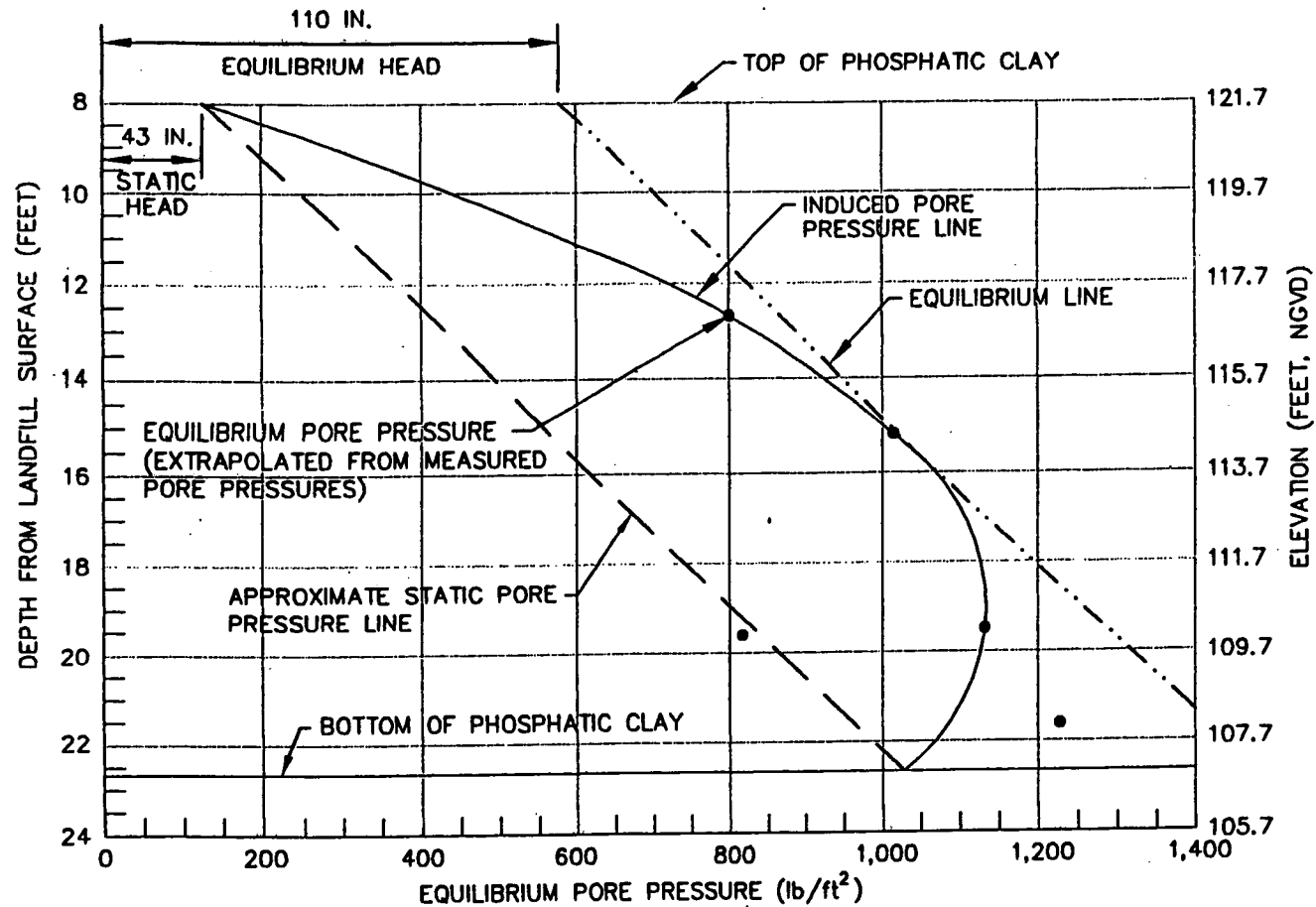
The Hydraulic Evaluation of Landfill Performance (HELP) model and the Giroud equation were used to evaluate scenarios applicable to Phases I-VI. For the evaluation, the varying slope of the phosphatic clay was calculated at approximately 0.5 percent. The estimated performance of each configuration evaluated is summarized in Table 5-1. Table 5-1 accounts for head over the liner, including the clays upward pore pressure as derived from the consolidation curves prepared by Ardaman in March 1994 (Figures 5-1 and 5-2). The configuration applicable to existing conditions at the landfill is Scenario No. 1. As previously stated, results indicate that Phases I-VI will maintain a leachate head over the liner of 12 inches or less during routine landfill operation.

**TABLE 5-1. LEACHATE COLLECTION AND REMOVAL SYSTEM ANALYSIS,
SOUTHEAST COUNTY LANDFILL (PHASES I-VI)**

Scenario	Description	Depth over Liner		Clay Slope ² (percent)	Pipe Distance ³ (feet)	Head over Liner including Clay Pore Pressure ⁴	
		FDEP ¹ Equation (inches)	HELP Model (inches)			Year 1 (110 inches) ⁵	Year 7 (43 inches) ⁵
1	Intermediate filling using intermediate cover over non-active areas. (Phases V and VI-Lifts 7C through 7D, 15 feet of waste).	12	5	1.0	200	-98	-38
2	After placement of 30 ft. waste (Phases I-VI).	19	3	1.6	400	-91	-40
3	Final Closure (Phases I-VI)	9	<1	1.6	400	-101	-42

Notes:

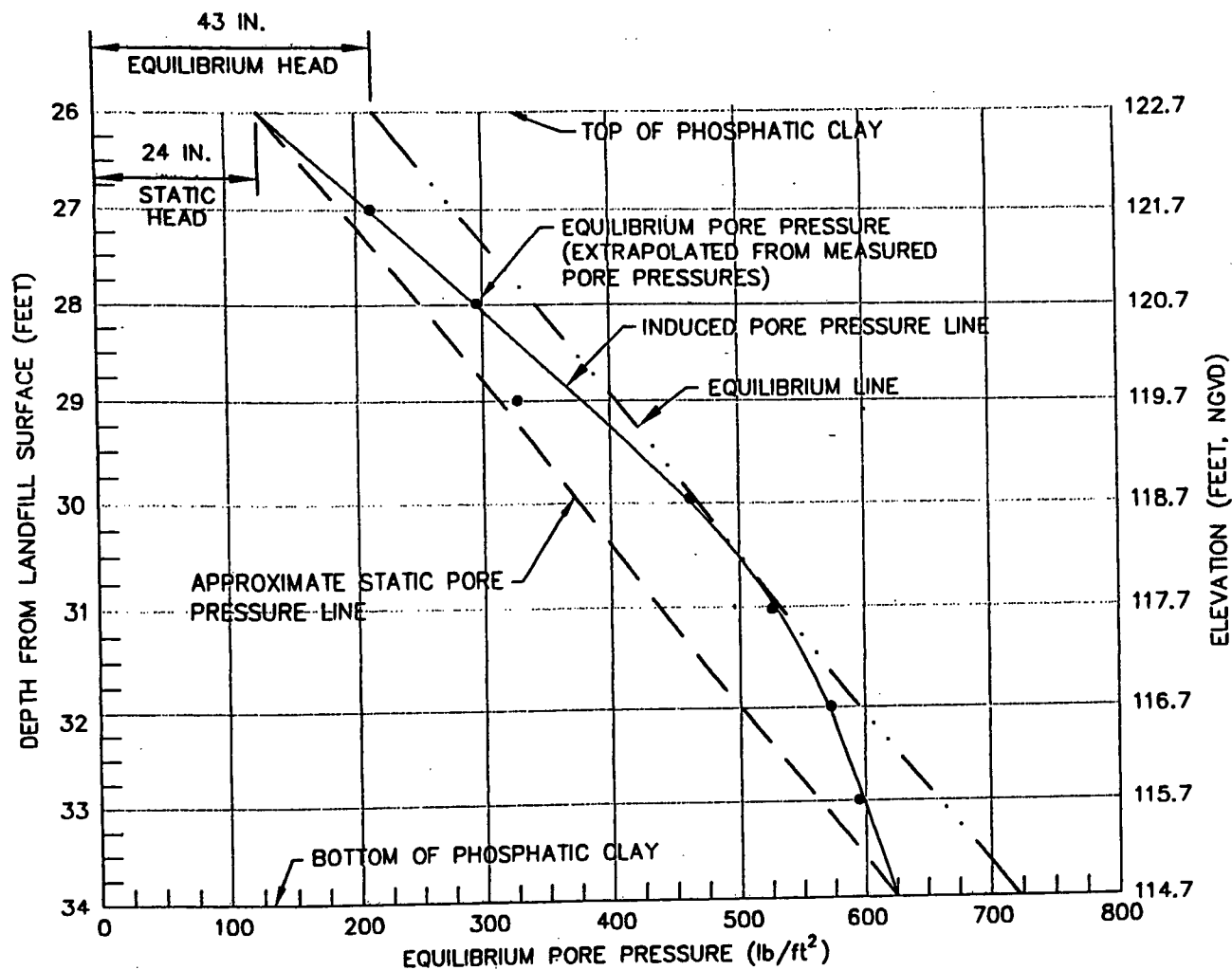
1. Moore's Equation as modified by J.P. Giroud and presented in the FDEP memorandum entitled "Municipal Solid Waste Landfill Alternate Design Closure Guidance" dated February 10, 1995.
2. Top of the clay as it slopes towards the collection pipe.
3. Distance leachate travels to reach collection pipe. Pipe distance varies between 200 and 400 feet in each Phase, 400 feet represents the worst-case condition.
4. (-) represents an upward gradient.
5. Upward pore pressure based on loading and consolidation curves prepared by Ardaman and Associates, Inc. dated March 7, 1994.



SOURCE: GEOTECHNICAL INVESTIGATION BY ARDAMAN & ASSOCIATES, INC.
DATED MARCH 7, 1994.

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Figure 5-1. Pore Pressure Versus Depth Relationship at 1.3 Years.



SOURCE: GEOTECHNICAL INVESTIGATION BY ARDAMAN & ASSOCIATES, INC.
DATED MARCH 7, 1994.

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Figure 5-2. Pore Pressure Versus Depth Relationship at 6.7 Years.

SECTION 6

MONITORING PHASES I-VI

6.1 LEACHATE LEVELS

Leachate depth and phosphatic clay settlement records continue to be maintained on site and are reported on a quarterly basis to the FDEP And EPC. Copies of the Settlement Data Form, and Facility Inspection and Evaluation Forms are included in Attachments A and B. Leachate Reporting Forms are included in Attachment C.

Leachate monitoring will continue as outlined in this Section. The level indicator of PS-B will monitor the leachate depth in the sump. The SWMD will monitor the level in the PS-B sump as outlined in this Section.

To facilitate monitoring operations and gather accurate data, flow meters are installed at the following locations:

- PS-A
- TPS-6
- Spray irrigation system
- Truck bypass at the LTRF
- Truck bypass at the Effluent Pond (Pond B)

Table 6-1 shows leachate depth in the sump area of Phase IV and total leachate removed from the landfill in data collected from January 1995 through December 2002.

TABLE 6-1. LEACHATE DEPTHS AND QUANTITY REMOVED

Monitoring Locations	1995	1996	1997	1998	1999	2000	2001	2002
Phase IV Piezometer (average inches)	58.6	35.9	23.4	25.2	30.8	19.5	31.4	N/A
Total Leachate Removed (million gallons)	29.3	28.1	26.3	31.2	33.7	23.2	20.9	19.7

As Phases V and VI are loaded with refuse, settlement will continue in these areas to create an ultimate low point in Phase VI. The settlement calculations by Ardaman for the landfill liner system, presented in the original permit application, are still valid. The PS-B sump was placed in the projected low point and is the primary leachate collection point for Phases I-VI. PS-B sump was designed to maximize the performance of leachate collection and removal system by allowing unimpeded flow of leachate into the sump.

PS-B is equipped with a level indicator located at the control panel near PS-A. The SWMD monitors the level on a daily basis; Attachment B presents the daily evaluation report form that is used. Maintaining the operation of the PS-B such that the leachate level in the sump does not exceed 24 inches from bottom provides reasonable assurance that the Phases I-VI have a leachate head over the liner of 12 inches or less during routine landfill operation (i.e., effective head taking into account consolidation pore pressures in the phosphatic clays after consolidation).

In order to measure the potentiometric levels in the landfill (Phases I-VI), the following field investigation will be conducted annually and submitted to the FDEP and EPC by April 15th of each year. Piezocone soundings will be performed in the vicinity of PC-1B (Phase I), PC-4B/PC-4C (southeastern portion of Phase IV), PC-3/PC-3B (northeastern portion of Phase III), and PC-1F (eastern end of Phase I), as shown on Figure 6-1. The piezocones soundings will collect the following data:

- Pore pressure above the phosphatic clays (within the sand drainage layer).
- Elevation of the top and bottom of the phosphatic clays.
- Pore pressure at the top, middle, and bottom of the phosphatic clay.
- Pore pressure below the phosphatic clays.

A report will be prepared, signed and sealed, by a registered professional engineer following each monitoring event and submitted to the FDEP and EPC presenting the findings and conclusions relative to the performance of the leachate collection system and recommendations as appropriate.

6.2 LEACHATE QUALITY

The SWMD field sampling personnel will conduct the leachate sampling activities in accordance with the applicable FDEP Standard Operating Procedures for field sampling. The leachate samples will be collected from location No.001 (see Figure 1-1) at the PS-A sump by grab sample using a decontaminated Teflon bailer. A Teflon flow control valve attached to the bailer will be used to empty the contents into the volatile organic compound (VOC) sample container to minimize aeration. The samples will be containerized in the appropriate sample containers, labeled, sampling procedures will be summarized in field documentation, and the sample containers will be secured in a cooler on wet ice. A standard Chain of Custody (COC) log will be completed and included with the samples. The cooler will be sealed with a Custody Seal and shipped by common carrier to an FDEP and FDH-approved environmental laboratory for analysis.

Leachate will be collected and analyzed annually for the parameters listed in Rule 62-701.510(8)(c) and 8(d). If this annual analysis indicates that a contaminant listed in 40 CFR 261.24 exceeds the regulatory level listed therein, the SWMD will initiate a monthly sampling and analysis program. If in any three consecutive months the same listed contaminant exceeds the regulatory level, the SWMD will, within 90 days, initiate a program designed to identify the source and reduce the presence of the contaminant in the leachate so that it no longer exceeds the regulatory level. This program may include additional monitoring of waste received and additional up-front separation of waste materials. Any leachate which is not recirculated or taken to a permitted industrial or domestic wastewater treatment facility will be treated or managed so that no contaminant exceeds the regulatory level of 40 CFR Part 261.24. If in any three consecutive months no listed contaminant is found to exceed the regulatory level, the SWMD will discontinue the monthly sampling and analysis and return to a routine sampling schedule.

6.3 EFFLUENT QUALITY

To provide reasonable assurance of adequate leachate treatment, the SWMD will sample and analyze the treated leachate (effluent) for the Primary and Secondary Drinking Water parameters and EPA Priority Pollutants 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, and semi-annually.

Effluent will be sampled by grab samples before disposal as follows:

<u>Parameter</u>	<u>Frequency</u>	<u>Units</u>
PH	Weekly	Std. Units
BOD ₅	monthly	mg/L
COD	monthly	mg/L
TSS	monthly	mg/L
NO ₃ -N	monthly	mg/L
TDS	monthly	mg/L

6.4 BIOSOLIDS QUALITY AND DISPOSAL

The biosolids from the LTRF will be disposed at the SCLF if they are found to be non-hazardous and pass the paint filter test. The biosolids will be sampled and analyzed annually for EPA Priority Pollutants, TCLP and as follows:

<u>Parameters</u>	<u>Units</u>
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 (dry weight)
Nickel	mg/kg (dry weight)
Selenium	mg/kg (dry weight)
Zinc	mg/kg (dry weight)
pH	std. units
Solids	percent

SECTION 7

NOTIFICATIONS AND SPILL COUNTERMEASURES

The FDEP and the EPC will be notified of any equipment failure or event that disrupts the routine operation of the LCRS. If the need for leachate storage arises, in Pond B, the SWMD will provide notification to the FDEP prior to using the pond for leachate storage as described in Section 4.7 of the LMP. The person responsible for operation of the SCLF is the Landfill Site Manager, SWMD, currently Mr. Meredith Matthews. He reports to the Landfill Services Executive Manager, SWMD, currently Ms. Patricia V. Berry. The SWMD will continue to evaluate the performance of the LMP and will propose modifications as necessary to accomplish the LMP objective and continue the proper management of leachate at the SCLF.

7.1 SECONDARY CONTAINMENT SPILL COUNTERMEASURES

The LTRF tankage 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. Before draining stormwater from the containment area, the SWMD 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 Site Manager (or qualified designee), the sump valves will be closed immediately after the stormwater is drained.

In the event of a liquid spill from the LTRF tankage system, the following will be accomplished:

1. Assess the cause of the spill and correct the condition promptly.
2. If the spill condition is at the leachate storage tank (575,000-gallons):
 - a. Shut down the landfill Main Leachate Pump Station.
 - 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 offsite County wastewater treatment plant.
3. If the spill condition is at the PACT process tank (209,600-gallons) or the second stage clarifier tank (15,700-gallons):
 - a. Shut down the LTRF.
 - b. The landfill main leachate pump station continues to operate.

- c. With a sump pump, transfer the spilled liquid directly into tanker trucks for disposal at an offsite County wastewater treatment plant or into the leachate storage tank.
- 4. If the spill condition is at the effluent tank (1,800-gallons):
 - a. Shut down the LTRF.
 - b. The landfill main leachate pump station continues to operate.
 - c. With a sump pump, transfer the spilled liquid directly into tanker trucks for disposal at an offsite County wastewater treatment plant or into the leachate storage tank.
- 5. If the spill condition is at the methanol tank (2,100-gallons):
 - 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.
 - c. Shut down the landfill main leachate pump station
 - d. Contact current hazardous waste Contractor. The Contractor will manage the removal, off-site disposal, and containment area cleanup for methanol.
- 6. For spill conditions No. 2, 3, and 4 above, after the spilled liquid is removed, SWMD personnel will water pressure wash the containment area and the rinse water will be pumped directly into a tanker truck for disposal at an offsite County wastewater treatment plant.
- 7. If the leachate storage tank will remain out of service for more than 48 hours, the SWMD will resume leachate removal from the SCLF to the storage Pond B by following the procedures described in Section 4.7.2. Leachate hauling offsite can resume from Pond B by following the procedure in Section 4.7.3(6a).
- 8. Within 24 hours of the spill occurrence, the SWMD will verbally notify the FDEP and EPC. A written report with remedial measures taken will be submitted to the FDEP and EPC within seven days following the leachate spill incident.

SECTION 8

REFERENCES

Application for New Stormwater Discharge Facility Construction Permit, Southeast County Landfill, CDM, February, 1983.

Application for Permit to Construct and Operate a Solid Waste Resource Recovery and Management Facility, Southeast County Landfill, CDM, February, 1983.

Construction Permit Application Phases V and VI Improvements, Southeast County Landfill, Hillsborough County, Florida, SCS Engineers, June 26, 1998.

Construction Plans, Phases II-VI, Southeast County Landfill, CDM, May, 1984.

Construction Quality Assurance Monitoring of Phase V and VI of the Southeast Landfill, Hillsborough County, Florida, GeoSyntec Consultants, May, 1992.

Contract Documents Including Initial Construction Plans and Specifications for Southeast County Landfill, as amended by the "as-built" Construction Drawings, CDM, January, 1994.

Evaluation of Filling Schedules and Stability Analysis for Southeast Sanitary Landfill, Hillsborough County, Florida, Ardaman & Associates, Inc., July, 1989.

Florida Administrative Code (FAC), Chapter 62, April 23, 1997 and May 27, 2001.

Hillsborough County Solid Waste Management Department (SWMD).

Hydrogeological Investigation, Southeast County Landfill, Ardaman & Associates, Inc., February, 1983.

Operation Permit Renewal Application, Southeast Landfill, Hillsborough County, Florida, SCS Engineers, December, 1988.

Pump Station B, Construction Permit Application and Design Report, Southeast Landfill, Hillsborough County, Florida, SCS Engineers, October 15, 1997.

Schroeder, P.R., Peyton, R.L., McEnroe, B.M., and Sjostrom, J.W., The Hydrologic Evaluation of Landfill Performance (HELP) Model, U.S. EPA, October, 1988.

Waste Management Inc. of Florida (WMI).

ATTACHMENT A
SETTLEMENT DATA FORM

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

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

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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.

ATTACHMENT B

FACILITY INSPECTION AND EVALUATION FORMS

**LEACHATE DEPTH/SUMMARY DATA FORM
SOUTHEAST COUNTY LANDFILL**

(Month/Year) _____

Date	Active Area (acres)	Depth TPS-6 (inches)	TPS-6 Flowmeter (gallons)	Depth ¹ Pond B (feet)	Pump ² Station B (inches)	PS-A Flowmeter (gallons)	Depth in 575k Tank (feet)	Leachate	Hauled	Leachate Dust Control/ Evap. (gallons)	Rainfall (inches)
								Contractor (gallons)	County (gallons)		
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											

Note: (1) If depth is 7.0 feet or greater, contact Supervisor immediately.

(2) If depth is greater than 24 inches (2.0 feet), contact Supervisor immediately. Complete Evaluation Report Form.

Comments: _____

Prepared by: _____

**LEACHATE DEPTH/SUMMARY DATA FORM
SOUTHEAST COUNTY LANDFILL**

(Month/Year) _____

Date	Active Area (acres)	Depth TPS-6 (inches)	TPS-6 Flowmeter (gallons)	Depth ¹ in Pond B (feet)	Pump ² Station B (inches)	PS-A Flow Meter (gallons)	Depth in 575k Tank (feet)	Leachate	Hauled	Leachate Dust Control/ Evap. (gallons)	Rainfall (inches)
								Contractor (gallons)	County (gallons)		
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
31											

Note: (1) If depth is 7.0 feet or greater, contact Supervisor immediately.

(2) If depth is greater than 24 inches (2.0 feet), contact Supervisor immediately. Complete Evaluation Report Form.

Comments: _____

Prepared by: _____

EFFLUENT DEPTH/QUANTITIES DATA FORM
SOUTHEAST COUNTY LANDFILL

(Month/Year) _____

Date	Depth in Pond A ¹ (feet)	Depth in Pond B ² (feet)	Pond B Leak Detection ³ (gallons)	Leachate Treated (gallons)	Treated Effluent Sprayed (gallons)	Treated Effluent Hauled		Treated Effluent Dust Control/ Evap. (gallons)	Treated Effluent Stored (gallons)	Time at End of Rainfall	Effluent ⁴ Runoff to Retention Area (Y/N)
						Contractor (gallons)	County (gallons)				
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											

Note (1) If depth is 4.5 feet or greater, contact Supervisor immediately.

(2) If depth is 7.0 feet or greater, contact Supervisor immediately.

(3) If rate is higher than 8,000 1,500 gallons per day, contact Supervisor immediately.

(4) If yes, contact Supervisor immediately. Complete Evaluation Report Form.

Comments: _____

Prepared by: _____

**EFFLUENT DEPTH/QUANTITIES DATA FORM
SOUTHEAST COUNTY LANDFILL**

(Month/Year) _____

Date	Depth in Pond A ¹ (feet)	Depth in Pond B ² (feet)	Pond B Leak Detection ³ (gallons)	Leachate Treated (gallons)	Treated Effluent Sprayed (gallons)	Treated Effluent Hauled		Treated Effluent Dust Control/ Evap. (gallons)	Treated Effluent Stored (gallons)	Time at End of Rainfall	Effluent ⁴ Runoff to Retention Area (Y/N)
						Contractor (gallons)	County (gallons)				
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
31											

Note (1) If depth is 4.5 feet or greater, contact Supervisor immediately.

(2) If depth is 7.0 feet or greater, contact Supervisor immediately.

(3) If rate is higher than ~~8,000~~ 1,500 gallons per day, contact Supervisor immediately.

(4) If yes, contact Supervisor immediately. Complete Evaluation Report Form.

Comments: _____

Prepared by: _____

DAILY LEACHATE COLLECTION AND REMOVAL SYSTEM
EVALUATION REPORT
SOUTHEAST COUNTY LANDFILL
(Month/Year) _____

Action	Day															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Pump Station B																
Normal Operation, level is equal or less than 24 inches.																
High Level Operation, confirm proper operation of the pump and level indicator. Contact supervisor immediately.																
575,000 Gallon Tank at LTRF																
Normal Operation.																
If level is greater than 11 feet, increase treatment, hauling, or recirculation.																
If level is greater than 6 feet, decrease or stop hauling, recirculation.																
Pond A (Effluent only)																
Normal Operation.																
If level is 6 inches or less, stop irrigation, dust control/evaporation, hauling.																
If level is greater than 4.5 feet, increase irrigation, dust control/evaporation, hauling.																
Pond B (Effluent or Leachate) (Circle One)																
Normal Operation.																
If level is 1 foot or less, stop spray evaporation, decrease dust control/evaporation, hauling.																
If level is 7 feet or greater, close valve P-3, increase dust control/evaporation, hauling.																
Observe runoff of effluent to stormwater basins?																
No.																
If yes, contact supervisor immediately, Stop spray irrigation. Identify Basin, Runoff Type and Remedial Action taken.																
Runoff Type 1=Severe, 2= Moderate, 3= Minor																
To Basin A, B, C, D																

Comments/Remedial Action:

Prepared by:

DAILY LEACHATE COLLECTION AND REMOVAL SYSTEM
EVALUATION REPORT
SOUTHEAST COUNTY LANDFILL
(Month/Year) _____

Action	Day														
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Pump Station B															
Normal Operation, level is equal or less than 24 inches.															
High Level Operation, confirm proper operation of the pump and level indicator. Contact supervisor immediately.															
575,000 Gallon Tank at LTRF															
Normal Operation.															
If level is greater than 11 feet, increase treatment, hauling, or recirculation.															
If level is greater than 6 feet, decrease or stop hauling, recirculation.															
Pond A (Effluent only)															
Normal Operation.															
If level is 6 inches or less, stop irrigation, dust control/evaporation, hauling.															
If level is greater than 4.5 feet, increase irrigation, dust control/evaporation, hauling.															
Pond B (Effluent or Leachate) (Circle One)															
Normal Operation.															
If level is 1 foot or less, stop spray evaporation, decrease dust control/evaporation, hauling.															
If level is 7 feet or greater, close valve P-3, increase dust control/evaporation, hauling.															
Observe runoff of effluent to stormwater basins?															
No.															
If yes, contact supervisor immediately, Stop spray irrigation. Identify Basin, Runoff Type and Remedial Action taken.															
Runoff Type To Basin															
1=Severe, 2= Moderate, 3= Minor A, B, C, D															

Comments/Remedial Action:

Prepared by: _____

Hillsborough County Southeast County Landfill Leachate
Treatment Facility

LEACHATE STORAGE TANK
WEEKLY INSPECTION

Tank Exterior Condition	Good	Leak	Corrosion
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Level Control Floats	Working		
	Yes	<input checked="" type="checkbox"/>	No
Cathodic Protection System	Working		
	Yes	<input checked="" type="checkbox"/>	No

Comments:

Voltage 0.47
Current 4.79
Potential -122

Prepared by:

M. J. D.

Date:

9-10-00

DAILY LOG

DATE: _____

INSPECTOR NAME: C. LEE SMITH

WEATHER CONDITIONS: _____

LOW _____'S TO HIGH _____'S

OPERATIONAL ACTIVITIES:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

CONSTRUCTION ACTIVITIES:

1. _____

PROPERTY MAINTENANCE ACTIVITIES (REPAIRS):

1. JANITOR AND MAINTENANCE ITEMS PER R.F.P.

INSPECTED SITE FOR:

HOUSEKEEPING _____

CONDITION OF FACILITY _____

SPILLS _____

CONDITION OF COVER:

DAILY _____

INTERMEDIATE _____

FINAL _____

INSPECTED CONDITION OF STORMWATER DISCHARGE:

GOOD _____

FAIR _____

POOR _____

RAIN GAUGE READINGS:

STATION #1 _____

STATION #2 _____

STATION #3 _____

STATION #4 _____

STATION #5 _____

STATION #6 _____

SUMP READING: PUMP A SUMP B: PRESSURE READING _____

HIGH LEVEL WARNING LIGHT
LIGHT OFF _____ ON _____

LEACHATE RECIRCULATION:

GALLONS RECIRCULATED _____ A.M. _____ P.M.

LEACHATE RECIRCULATION IN ACCORDINANCE WITH FDEP
APPROVED LEACHATE MANAGEMENT PLAN DATED AUGUST 4, 1995.

INITIAL _____

ANY PROBLEMS OR CORRECTIVE ACTIONS REQUIRED NOTED BY CONTRACTOR:

EQUIPMENT

<u>EQUIPMENT</u>	<u>NO. ON SITE</u>	<u>NO. OPERATIONAL</u>
DOZER	2	
COMPACTOR	2	
SCRAPERS	1	
LOADERS	1	
TRACTORS	2	
EXCAVATORS	1	
GRADERS	1	
TANKERS	1	
PICK-UPS	5	
ROLL-OFFS	1	
DUMP TRUCKS	2	
MISCELLANEOUS	8	

COMMENTS:

BACK UP COMPACTOR AVAILABLE IN ORLANDO AND FT. MYERS SITES

PERSONNEL

<u>DEPARTMENT</u>	<u>NO. ASSIGNED TO SITE*</u>	<u>NO. ON SITE</u>
ADMINISTRATIVE	3	
OPS SUPERVISOR	1	
MAINTENANCE	0	
OPERATIONS	5	
LABORERS	3	
SECURITY	2	
ENGINEERING	1	
TRUCK DRIVERS	2	
TEMP LABORERS	0	
SUB-CONTRACTORS		
OTHER @		

COMMENTS:

ATTACHMENT C
LEACHATE REPORTING FORMS

HILLSBOROUGH COUNTY SOUTHEAST COUNTY FACILITY
LEACHATE MANAGEMENT

DAILY FIELD DATA ENTRY FORM

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

Technician	Date
	Time

Parameter	Date	Date	Total
TPS-6 Flowmeter Reading			
Pump Station A (PS-A), gal			
Pump Station B (PS-B), inches	9" +	9" +	
Section 7 Pump Station, gal			
Section 7 Leak Detection, gal ¹			
Depth in Pond B, feet			
Depth in Pond A, feet			
MLPS Flowmeter Reading, gal			
Leachate Dust Control/Evap, gallons			
Effluent Spray Irrigation, gallons			
Effluent Dust Control/Evap, gallons			
Effluent Flow Meter Reading			
MLPS, Effluent Bypass Flowmeter			
Main L.T.P. Leachate Bypass			
Depth in 575k Tank, feet			

Note: (1) If rate is greater than 1,250 gallons per day, contact Supervisor immediately.

Comments

TABLE 1. LEACHATE WATER BALANCE REPORT FORM
DECEMBER 2002 (revised February 2003)
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
Day	Rainfall (in.)	Depth in Pond A (ft.)	Depth in Pond B (in.)	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 Sec 7 Leak Det (gal.)	Leachate Pumped to MLPS from Section 7 (gal.)	Total Leachate Pumped to LTRF (gal.)	Leachate 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	0.01	0.0	0.0	NR	38,955	49,591	0	0	49,591	NR	0	0	0	800	0	0	0	0	0	0
2	0.00	0.0	0.0	20.2	38,955	49,591	0	0	49,591	355,000	0	108,416	0	800	0	0	0	0	0	0
3	0.00	0.0	0.0	17.9	37,630	48,198	0	0	48,198	297,000	0	102,302	12,022	800	0	0	0	0	0	9,600
4	0.00	0.0	0.0	21.1	36,640	46,305	0	0	46,305	238,000	0	84,219	12,028	800	0	0	0	0	0	9,600
5	1.55	0.0	0.0	21.0	39,650	50,299	0	0	50,299	202,000	0	48,129	0	800	0	0	0	0	0	0
6	0.22	0.0	0.0	17.5	38,425	52,144	0	0	52,144	214,000	0	102,349	0	800	0	0	0	0	0	0
7	0.00	0.0	0.0	10.6	32,465	98,111	0	0	98,111	214,000	0	60,189	0	800	0	0	0	0	0	0
8	0.00	0.0	0.0	NR	35,493	56,381	0	0	56,381	NR	0	0	0	800	0	0	0	0	0	0
9	2.63	0.0	0.0	17.3	35,493	56,381	0	0	56,381	278,000	0	90,354	0	800	0	0	0	0	0	0
10	0.20	0.0	0.0	19.3	36,245	31,304	0	0	31,304	230,000	0	78,209	0	800	0	0	0	0	0	0
11	0.00	0.0	0.0	17.5	68,080	132,222	0	0	132,222	288,000	0	126,351	0	800	0	0	0	0	0	0
12	2.07	0.0	0.0	20.1	50,175	115,556	0	0	115,556	281,000	0	90,255	0	800	0	0	0	0	0	0
13	3.37	0.0	0.0	19.6	38,115	112,987	0	0	112,987	317,000	0	114,517	0	800	0	0	0	0	0	0
14	0.00	0.0	0.0	20.5	50,730	89,544	0	0	89,544	307,000	0	108,316	0	800	0	0	0	0	0	0
15	0.00	0.0	0.0	NR	37,470	103,169	0	0	103,169	NR	0	0	0	800	0	0	0	0	0	0
16	0.00	0.0	0.0	19.7	37,470	103,169	0	0	103,169	422,000	0	84,565	0	800	0	0	0	0	0	0
17	0.00	0.0	0.0	20.7	33,455	95,707	0	0	95,707	449,000	0	73,689	0	800	0	0	0	0	0	0
18	0.00	0.0	0.0	19.5	13,907	86,230	0	0	86,230	485,000	0	121,706	0	800	0	0	0	0	0	0
19	0.00	0.0	0.0	21.7	43,933	124,540	0	0	124,540	489,000	0	111,276	0	800	0	0	0	0	0	0
20	0.68	0.0	0.0	18.9	48,035	88,382	0	0	88,382	473,000	0	121,631	0	800	0	0	0	0	0	0
21	0.00	0.0	0.0	19.3	51,060	99,640	0	0	99,640	463,000	0	126,591	0	800	0	0	0	0	0	0
22	0.00	0.0	0.0	NR	38,625	84,742	0	0	84,742	NR	0	48,831	0	800	0	0	0	0	0	0
23	0.00	0.0	0.0	20.7	38,625	84,742	0	0	84,742	463,000	0	72,934	0	800	0	0	0	0	0	0
24	4.37	0.0	0.0	20.5	43,920	42,942	0	0	42,942	NR	0	78,587	0	800	0	0	0	0	0	0
25	0.00	0.0	0.0	NR	40,876	101,823	0	0	101,823	NR	0	24,055	0	800	0	0	0	0	0	0
26	0.00	0.0	0.0	21.0	40,876	101,823	0	0	101,823	403,000	0	79,152	0	800	0	0	0	0	0	0
27	0.00	0.0	0.0	20.7	39,193	110,673	0	0	110,673	497,000	0	72,450	0	800	0	0	0	0	0	0
28	0.00	0.0	0.0	21.0	91,675	58,366	0	0	58,366	499,000	0	152,854	0	800	0	0	0	0	0	0
29	0.00	0.0	0.0	NR	57,920	105,920	0	0	105,920	NR	0	98,292	0	800	0	0	0	0	0	0
30	0.00	0.0	0.0	19.1	57,920	105,920	0	0	105,920	473,000	0	132,897	0	800	0	0	0	0	0	0
31	5.55	0.0	0.0	19.7	47,795	95,563	0	0	95,563	446,000	0	109,005	0	800	0	0	0	0	0	0
Total	20.65				1,339,805	2,781,962	0	0	2,781,962		0	2,622,121	24,050		800	0	0	0	0	19,200
Daily Average		0.0	0.0	19.4	43,220	89,741	0	0	89,741	366,000	0	93,647								
Mo. Average									89,741		0	84,585	800						0	620

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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 leak detection pumped into Section 7 leachate sump riser.
9. Column XI, calculated from depth in 575,000 gal. leachate tank.
10. Columns VI, VII, VIII, IX, XII, XIII, XIV, XVIII, and XIX, quantities from flow meters.
11. Column XXI includes 80% of the daily values from Columns XIV, XVIII, and XIX plus 5% of the daily values from column XVII.

TABLE 2. FIELD DATA ENTRY FORM
DECEMBER 2002 (revised February 2003)
SOUTHEAST COUNTY LANDFILL, HILLSBOROUGH COUNTY, FLORIDA

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVI	XVIII	XIX
Day	Reading PS-B (in.)	Section 7 Leak Det. (gal.)	Section 7 Flow Meter (gal.)	Flow Meter TPS-6 (gal.)	Flow Meter Pump Sta. A (gal.)	Depth in 575K Tank (ft.)	Leachate Hauled		Leachate Dust Control (Sprayed) (gal.)	Rainfall (in.)	Depth in Pond A (ft.)	Depth in Pond B (ft.)	Effluent Sprayed (Pond B) (gal.)	Leachate Treated at LTRF (gal.)	Effluent Irrigation (gal.)	Effluent Hauled		Effluent Dust Control (Sprayed) (gal.)
							Contractor (gal.)	County (gal.)								Contractor (gal.)	County (gal.)	
1	NR	0	0	60,918,435	1,489,338	NR	0	0	0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	11.2	0	0	60,957,390	1,538,929	12.33	108,416	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	8.9	0	0	60,995,020	1,587,127	10.33	102,302	0	12,022	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	12.1	0	0	61,031,660	1,633,432	8.25	84,219	0	12,028	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	12.0	0	0	61,071,310	1,683,731	7.00	48,129	0	0	1.55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	8.5	0	0	61,109,735	1,735,875	7.42	102,349	0	0	0.22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	1.6	0	0	61,142,200	1,833,986	7.42	60,189	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	NR	0	0	61,177,693	1,890,367	NR	0	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	8.3	0	0	61,213,185	1,946,747	9.67	90,354	0	0	2.63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	10.3	0	0	61,249,430	1,978,051	8.00	78,209	0	0	0.20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	8.5	0	0	61,317,510	2,110,273	10.00	126,351	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	11.1	0	0	61,367,685	2,225,829	9.75	90,255	0	0	2.07	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	10.6	0	0	61,405,800	2,338,816	11.00	114,517	0	0	3.37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	11.5	0	0	61,456,530	2,428,360	10.67	108,316	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	NR	0	0	61,494,000	2,531,529	NR	0	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	10.7	0	0	61,531,470	2,634,698	14.67	84,565	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	11.7	0	0	61,564,925	2,730,405	15.58	73,689	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	10.5	0	0	61,578,832	2,816,635	16.83	109,259	12,447	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	12.7	0	0	61,622,765	2,941,175	17.00	105,233	6,043	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	9.9	0	0	61,670,800	3,029,557	16.42	121,631	0	0	0.68	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	10.3	0	0	61,721,860	3,129,197	16.08	126,591	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	NR	0	0	61,760,485	3,213,939	NR	48,831	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	11.7	0	0	61,799,110	3,298,681	16.58	72,934	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	11.5	0	0	61,843,030	3,341,623	16.08	60,515	18,072	0	4.37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	NR	0	0	61,883,906	3,443,446	NR	24,055	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	12.0	0	0	61,924,782	3,545,268	14.00	67,124	12,028	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	11.7	0	0	61,963,975	3,655,941	17.25	72,450	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	12.0	0	0	62,055,650	3,714,307	17.33	120,285	32,569	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	NR	0	0	62,113,570	3,820,227	NR	72,211	26,081	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	10.1	0	0	62,171,490	3,926,146	16.42	120,859	12,038	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	10.7	0	0	62,219,285	4,021,709	15.50	109,005	0	0	5.55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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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 XI, trace is less than 0.01 inches.
5. Columns III, IV, V, VI, VIII, IX, X, XIV, XV, XVI, XVII and XVIII are quantities from flow meters.
6. Columns XII and XIII measured from staff gages in each pond.

Type of Cover	Phases I-VI acres	Section 7 acres
Open	7	0
Intermediate	133.4	0
Final	23	0
Not Opened	0	12.5

TABLE 3. 2002 MONTHLY LEACHATE BALANCE SUMMARY (revised February 2003)
CAPACITY EXPANSION AREA
SOUTHEAST COUNTY LANDFILL
HILLSBOROUGH COUNTY, FLORIDA

Month	Rainfall (in.)	Leachate Arriving at LTRF			Leachate Leaving LTRF			Effluent Disposal			Inflow / Outflow For LTRF		
		Leachate Hauled to LTRF from HHLF/TRLF (gal.)	Leachate from Section 7 Pumped to LTRF (gal.)	Leachate from SCLF 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 Arriving at LTRF (gal.)	Total Leaving LTRF (gal.)	Balance ³ (gal.)
January	1.32		0	1,383,233	1,537,172	96,147	0	0	0	0	1,383,233	1,633,319	-250,086
February	3.88	0	0	1,166,415	1,082,345	102,189	0	0	0	0	1,166,415	1,184,534	-18,119
March	0.73	0	0	1,225,193	1,137,036	138,240	0	0	0	0	1,225,193	1,275,276	-50,083
April	6.48	0	0	1,106,482	1,118,233	66,166	0	0	0	0	1,106,482	1,184,399	-77,917
May	2.40	0	0	1,153,613	970,556	240,509	0	0	0	0	1,153,613	1,211,065	-57,452
June	8.05	0	0	1,292,430	1,379,660	72,158	0	0	0	0	1,292,430	1,451,818	-159,388
July	9.03	0	0	2,117,337	2,426,241	0	0	0	0	0	2,117,337	2,426,241	-308,904
August	10.96	0	0	2,394,923	2,177,705	0	0	0	0	0	2,394,923	2,177,705	217,218
September	6.61	0	0	1,956,023	2,126,668	6,061	0	0	0	0	1,956,023	2,132,729	-176,706
October	3.13	0	0	1,608,854	1,552,490	147,350	0	0	0	0	1,608,854	1,699,840	-90,986
November	4.27	0	0	1,580,635	1,546,767	240,484	0	0	0	0	1,580,635	1,787,251	-206,616
December	20.65	0	0	2,781,962	2,622,121	24,050	0	0	0	0	2,781,962	2,646,171	135,791
YTD Total	77.51	0	0	19,767,100	19,676,994	1,133,354	0	0	0	0	19,767,100	20,810,348	-1,043,248

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Note:

1. If the bypass at the effluent pond is ever used to pump effluent back to the LTRF, this table must be modified.
2. Leachate from the Hillsborough Heights and Taylor Road landfills is being hauled to the Faulkenburg Road Wastewater Treatment Facility.
3. Balance represents total inflow to LTRF minus total outflow from LTRF.