April 16, 2021
File No. 09215600.12

Mr. Phillip J. Ciaravella
Florida Department of Environmental Protection
Solid Waste Section, MS 4565
2600 Blair Stone Road
Tallahassee, Florida, 32399-2400

Subject: Hillsborough County, Southeast County Landfill
Revised Leachate Management Plan
Operation Permit Minor Modification Application
FDEP Permit No. 35435-022-SO-01

Dear Mr. Ciaravella:

The Hillsborough County Public Utilities Department, Solid Waste Management Division (SWMD) submitted a minor modification application to update the Southeast County Landfill (SCLF) Leachate Management Plan (LMP) on February 18, 2021. On behalf of the SWMD, SCS Engineers (SCS) submits the following attachments and responses to your Request for Additional Information (RAI) in a letter dated March 12, 2021.

Summary of Attachments

The enclosed RAI Response addresses each of the March 12, 2021 requests for additional information. In order to address each request, SCS has provided multiple attachments to this letter. A summary of the attachments are included below.

Attachment 1 of this letter contains email correspondence regarding waste to energy (WTE) ash relocation between SCS and the Florida Department of Environmental Protection (FDEP).

Attachment 2 of this letter contains a revised Leachate Evaporator Facility (LEF) construction drawing set, prepared by others and provided to SCS, to address RAI items number one, number three, and number four. The drawings included as Attachment 2 have been resized to 11" X 17" for printability. The original drawings are 24" X 36".

Attachment 3 of this letter contains secondary containment capacity calculations prepared by others and provided to SCS for submittal as response to the RAI.

Attachment 4 of this letter contains a diagram, prepared by others, depicting a conceptual cross section of the Residuals Management Tanks and the Decant Tank.

Attachment 5 of this letter contains a revised LEF block flow diagram to the address RAI item number four request.

Attachment 6 of this letter includes a revised LMP, with revisions identified in redline and strikeout, to address RAI requests number four and number five.

In addition to **Attachment 2** and **Attachment 6** of this letter, Revised LEF Construction Drawings digitally certified by Carlson Environmental Consultants, PC (CEC) and a conformed LMP with changes accepted, digitally certified by SCS, have been provided with this transmittal as separate files.

Summary of RAI Response LMP Modifications

The enclosed RAI Response addresses each of the March 12, 2021 requests for additional information. In addition to revising the LMP in order to address each RAI request number, SCS incorporated revisions to the LMP related to the Temporary Ash Storage Area. The additional information has been incorporated to provide details regarding the relocation of the waste to energy (WTE) ash stockpiles from the current location in Phase III to the Capacity Expansion Area (CEA).

Relocation of Temporary Beneficial Reuse Ash Stockpiles

The relocation of the temporary ash reuse stockpile is being implemented in order to conform to the alternate fill sequence outlined as part of the 2020 Request for Alternate Procedure Approval dated March 13, 2020. SCS and FDEP conducted telephone conversations and provided propose WTE ash relocation information via emails dated March 3, 2021 and March 12, 2021. FDEP approved the relocation of the WTE ash to the CEA via email on March 15, 2021, subject to conformance to the information and procedures provided in the March 3 and March 12, 2021 emails. Transcripts of the email correspondence are provided as **Attachment 1**. Additional revisions to account for the WTE ash relocation include an updated Figure 3.2, Figure 4.1, and text revisions to LMP Section 8.2.1 *Temporary Ash Storage Area*.

Response to March 12, 2021 RAI

We have provided additional information, where applicable. If a response modifies a section of the LMP, the respective section(s) has been updated accordingly. A complete version of the LMP that includes all revisions made in responding to this RAI are attached to this letter, using a strikethrough (e.g., deleted) and underline (added) format, to facilitate review. Copies of the revised documents with all changes accepted (conformed) are also provided as attachments to this response letter.

For ease of review, each Florida Department of Environmental Protection (FDEP) comment is reiterated in **bold type**, followed by our response. The following are our responses:

1. **[Electronic Document pages 4, 5, and 6] Sheets 4, 5, and 6. Correct the base drawing used for these sheets. On each sheet the "proposed water main" (thick black line) is drawn connected to a "leachate routing line" (thin cyan line) leaving the Leachate Evaporator Facility (LEF).**
   Regulatory Reference: Paragraph 62-701.320(7)(f)6, F.A.C.

Response: CEC has provided the revised drawings included as a separate file for digital certification purposes. Sheets 4, 5, and 6 incorporate a revised water main alignment and the intended location of the leachate forcemain in accordance with the sheet set legend. The revised drawings have also been resized to 11" X 17" sheets for printability and included as **Attachment 2**.

2. **[Electronic Document page 8] Sheet 8, Detail 2. The leachate originates from the double-lined disposal cell and is conveyed to the LEF. The LEF will be constructed with a containment wall to provide secondary containment of the stored and processed leachate and chemical storage tanks. Evaluate the need to include double-walled piping for the two leachate lines in order to prevent a potential release to the environment.**
   Regulatory Reference: Paragraph 62-701.320(7)(f)6, F.A.C.

Response: The LEF design team, CEC and Heartland Water Technologies (Heartland), have evaluated regulatory requirements and environmental protection considerations in development of the LEF and associated utilities design. The forcemain design includes single-walled standard dimension ratio 11 (SDR 11) high density polyethylene (HDPE) pipe, which is consistent with FDEP regulatory requirements as well as existing forcemain previously installed and currently utilized at the SCLF and other solid waste facilities throughout Florida and the FDEP Southwest District.

3. **[Electronic Document page 8] Sheet 8, Detail 4. In order to determine the required secondary containment volume, specify the height of the "Perimeter Containment Wall."**
   Regulatory Reference: Paragraph 62-701.400(6)(c)5, F.A.C.

Response: CEC has provided the revised drawings included as a separate file for digital certification purposes. Sheet 8, Detail 4 depicts the height of the containment wall as 8" from top of pad to top of containment wall. Secondary containment volume calculations have been completed by CEC and provided as Attachment 3. These calculations indicate that each of the containment areas can hold at least 110 percent of the volume of either the largest tank within the containment system or the total volume of all interconnected tanks, whichever is greater in accordance with 62-701.400(6)(c)5, F.A.C. The revised drawings have also been resized to 11" X 17" sheets for printability and included as Attachment 2.

A depicting the Residuals Management Tanks and the Decant Tank flow direction has been included as Attachment 4. As described in LMP Section 11.3, and shown in Attachment 4, only a single Residuals Management Tank is connected to the Decant Tank at a time. Because the Residuals Management Tank outlets are confined to skimmers in the headspace of the Residuals Management Tanks, they are not considered to be hydraulically connected to the Decant Tank. A catastrophic failure of any of the tankage, such as a tank puncture, would not result in the release of another tank's contents.

4. **[Electronic Document pages 94 and 117] Section 8.4, Leachate Evaporator Facility Volume Reduction, page 23. Details on the three chemical additions shown in Appendix B – Leachate Evaporator Facility Process Flow Diagram are missing from this section. Specify the materials being used and the nature of their use in the LEF (sic). Specify the size of the chemical tank, decant tank, and residual management tank seen on sheets 4, 5, and 6 of the drawings.**

   Regulatory Reference: Paragraph 62-701.320(7)(f)6, F.A.C.

Response: CEC has provided revised drawings indicating the size of each tank which we have included as a separate file for digital certification purposes. The revised drawings have also been resized to 11" X 17" sheets for printability and included as Attachment 2.

In addition, Heartland has provided a revised block flow diagram with supplemental information regarding the chemicals used at the facility which is included as **Attachment 5**. Heartland no longer anticipates that antiscaling chemicals will be required for LEF operation, and the chemical addition has been removed from the updated block flow diagram. The remaining two chemical additions, antifoam and the clean in place (CIP) chemicals are discussed in further detail within Section 8.4 of the LMP. The LMP has also been revised to include an additional Section 11.3 which includes information regarding proposed LEF tankage, secondary containment, and spill countermeasures. A revised LMP with revisions identified in redline and strikeout is included as **Attachment 6**. A conformed and digitally certified LMP with changes incorporated is included with this transmittal as a separate attachment.

[Electronic Document pages 168 and 169] Section 11.2, Storage Tank Secondary Containment Spill Countermeasures, pages 35 and 36. Specify the size of the storage tanks and storage ponds given in this section. The sizes of the tanks T6, T2, T3, T5 and storage pond B only need to be given once as with tank T1.

Regulatory Reference: Paragraph 62-701.400(6)(c)5, F.A.C.

Response: Section 11.2 of the LMP has been updated to indicate tank capacity for each of the Leachate Treatment and Reclamation Facility tanks T6, T2, T3, and T5. The Pond B storage capacity is 236,000 gallons, as described in LMP Section 8.2. Additional revisions to Section 8.2 include removal of procedure to evaporate effluent in Pond B through utilization of nozzles surrounding the Pond. This system is being removed as part of the Leachate Evaporator Facility project. The Water Balance Tables have been updated to reflect the removal of the system as well.

Furthermore, the LMP has been revised to include an additional Section 11.3 which includes information regarding proposed LEF tankage, secondary containment, and spill countermeasures. A revised LMP with revisions identified in redline and strikeout is included as **Attachment 6**. A conformed and digitally certified LMP with changes incorporated is included with this transmittal as a separate attachment.

Please do not hesitate to contact us should you have any questions or require additional information.

Sincerely,

Kollan Spradlin

Digitally signed by Kollan Spradlin
Date: 2021.04.16 16:40:03 -04'00'

KOLLAN LEE SPRADLIN
LICENSE
No. 82852
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Kollan L. Spradlin, P.E.
Sr. Project Professional
SCS Engineers

Robert B. Curtis, P.E.
Project Director
SCS Engineers

KLS/RBC;kls

cc: Kimberly Byer, SWMD
Larry Ruiz, SWMD
Ron Cope, HCEPC

Encl.

Kollan Lee Spradlin, Professional Engineer, State of Florida License No. 82852

This document has been digitally signed and sealed by Kollan Lee Spradlin, PE, on 04/16/2021.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

ATTACHMENT 1

Email Correspondence Regarding WTE Ash Relocation

Spradlin, Kollan

From: Ciaravella, Philip <Philip.Ciaravella@FloridaDEP.gov>
Sent: Monday, March 15, 2021 9:37 AM
To: Spradlin, Kollan; Dertien, Joe; Madden, Melissa
Cc: Ruiz, Larry; Curtis, Bob; Herron, Fauve; ONeillJ@hillsboroughcounty.org
Subject: Re: Hillsborough Southeast County Landfill Ash Relocation Request

Kollan- Thank you for the additional information regarding the ash location project at the Hillsborough Southeast County Landfill. The Department has no objection to the relocation of WTE ash from Phase III to a contained area on the Capacity Expansion area. The relocation will be conducted in accordance with the information below and your 3/3/21 email regarding the ash relocation.

Please contact me with any questions or concerns regarding this information.

Phil

Philip J. Ciaravella
Solid Waste Section
Florida Department of Environmental Protection
(850) 245-8742

From: Spradlin, Kollan <KSpradlin@scsengineers.com>
Sent: Friday, March 12, 2021 4:17 PM
To: Dertien, Joe <Joe.Dertien@dep.state.fl.us>; Ciaravella, Philip <Philip.Ciaravella@FloridaDEP.gov>; Madden, Melissa <Melissa.Madden@FloridaDEP.gov>
Cc: Ruiz, Larry <RuizLE@HillsboroughCounty.ORG>; Curtis, Bob <BCurtis@scsengineers.com>; Herron, Fauve <FHerron@scsengineers.com>; ONeillJ@hillsboroughcounty.org <ONeillJ@hillsboroughcounty.org>
Subject: RE: Hillsborough Southeast County Landfill Ash Relocation Request

All,

Based on the phone discussion conducted between Phil, Joe, Bob, and myself on the afternoon of March 12, 2021, SCS is providing the additional information regarding the ash relocation.

1. The relocation of the WTE ash to the CEA will not interfere with the CEA fill sequence. Filling activities during the storage of WTE ash will be conducted on the Phase I-VI disposal area.
2. Should the Northwest Transfer Station Design-Build Project not utilize all of the currently available processed WTE ash, the remainder will be disposed of at the active face in accordance with currently approved practices. The ash will be disposed of at the conclusion of the Northwest Transfer Station Design-Build Project (tentatively scheduled for completion in November 2022).
3. The SWMD has contingency plans to manage leachate at the WTE ash storage area. Should the pump at the new ash storage drainage location fail, an emergency diesel pump located at the site will be moved to the ash storage area to provide additional capability to convey leachate to PS-9.

4. We estimate that all gradations of the WTE ash located on site for beneficial reuse totals approximately 20,516 tons, based on Meldgaard US, Inc.'s study summary.
5. The estimated duration of stockpiled WTE ash is 20 months. As indicated in response #2, the Northwest Transfer Station Design-Build project is scheduled for completion in November 2022.
6. Notification will be provided to FDEP upon completion of the ash relocation activities to the CEA as well as of any significant changes in the schedule for beneficial reuse or storage of the WTE ash.

Please let us know if you have any additional questions.

Thank you,

Kollan

Kollan Spradlin, PE, CHMM
SCS Engineers
Tampa, Florida
813-804-6706 (W)
813-955-4906 (C)
KSpradlin@scsengineers.com

www.scsengineers.com

Please note that I will be primarily working remotely through 2021. The best way to reach me is my cell phone.

From: Spradlin, Kollan
Sent: Wednesday, March 3, 2021 4:35 PM
To: Joe.Dertien@dep.state.fl.us; Ciaravella, Philip <Philip.Ciaravella@FloridaDEP.gov>; 'Melissa.Madden@dep.state.fl.us' <Melissa.Madden@dep.state.fl.us>
Cc: Ruiz, Larry <RuizLE@HillsboroughCounty.ORG>; Curtis, Bob <BCurtis@scsengineers.com>; Herron, Fauve <FHerron@scsengineers.com>
Subject: Hillsborough Southeast County Landfill Ash Relocation Request

Phil, Melissa, and Joe,

We are reaching out to FDEP on behalf of the Hillsborough County Solid Waste Management Division (SWMD) to inquire about the Southeast County Landfill (SCLF) Leachate Management Plan (LMP) modification submitted to FDEP on February 18, 2021 and waste to energy (WTE) ash relocation. We are currently awaiting additional information from outside firms and vendors to address phone conversations that I had with Joe regarding leachate management at the Leachate Evaporator Facility. We are also working to include additional revisions to the LMP for relocation of the current WTE ash stockpile on Phase III of the landfill.

The current ash storage area was created as part of a screening and curing project so that the ash could be beneficially reused at the Northwest Transfer Station (NWTS) design-build project. The project is currently in the design phase and ash reuse permits will be acquired following NWTS design, prior to construction.

Condition 3 of the March 13, 2020 Alternate Procedure required alteration of the SCLF fill sequence to increase the slopes over the crown of Phase II and Phase III to promote stormwater runoff. The fill sequence was subsequently revised to incorporate Lift 18A to increase the crown slopes to approximately 7.5%. Lift 18A was designed to proceed counter-clockwise around Phase II, and over Phase III. Due to an unexpected increase in incoming tonnage at SCLF, filling Lift 18A has been progressing at an unanticipated pace. We estimate that if the current trends continue, the working

face will approach the current ash storage area within the next month or two (see photo). The selected contractor expects relocation of the ash to take an additional eight weeks.

In order to continue with the currently approved fill sequence to meet Alternate Procedure Condition 3, SWMD is requesting FDEP approval to begin the relocation of the WTE ash to a contained area on the CEA, prior to permit modification approval. We have attached relevant documents and proposed language that will be incorporated into the LMP. The proposed relocation area will be contained with a 3-foot by 2-foot containment berm and the storage area will be regraded to drain to the southwest corner where a pump and forcemain will be located. The current practice of treating and containing precipitation that contacts the ash as leachate will be continued, and leachate that accumulates in the southwest corner will be pumped to Pump Station 9.

Please feel free to contact us for more information or to set up a discussion with a larger group of representatives before moving forward.

Thank you,

Kollan

Kollan Spradlin, PE, CHMM
Senior Project Professional
SCS Engineers
3922 Coconut Palm Drive, Suite 102
Tampa, Florida 33619
813-804-6706 (W)
813-955-4906 (C)
KSpradlin@scsengineers.com

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www.scsengineers.com

Please note that I will be primarily working remotely through 2021. The best way to reach me is my cell phone.

ATTACHMENT 2

Leachate Evaporator Facility Construction Drawings have been prepared, certified, and provided by others. The drawings included in this file have been resized to 11" x 17" and are not sealed. Digitally certified drawings have been provided as a separate file. SCS Engineers has provided these drawings as reference, and did not direct design or production.

HILLSBOROUGH COUNTY
SOUTHEAST COUNTY LANDFILL
LEACHATE EVAPORATOR INSTALLATION
PERMIT DRAWINGS

LITHIA, FLORIDA

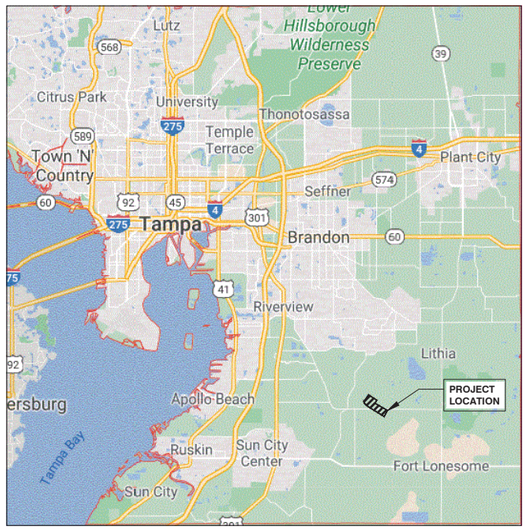
DECEMBER, 2020

(REVISED APRIL 2021)

Hillsborough County Florida

BOARD OF COUNTY COMMISSIONERS

HARRY COHEN	- DISTRICT 1
KEN HAGAN	- DISTRICT 2
GWENDOLYN W. MYERS	- DISTRICT 3
STACY R. WHITE	- DISTRICT 4
MARIELLA SMITH	- DISTRICT 5
PAT KEMP	- DISTRICT 6
KIMBERLY OVERMAN	- DISTRICT 7



LOCATION MAP
NOT TO SCALE

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1.	TITLE SHEET
2.	OVERALL SITE PLAN
3.	EXISTING CONDITIONS
4.	PROPOSED CONDITION
5.	CONDUIT SCHEDULE
6.	EROSION AND SEDIMENT PLAN
7.	EROSION AND SEDIMENT DETAILS
8.	TRENCH & WALL DETAILS

CEC

305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765

CEC JOB NO. 208.01.01

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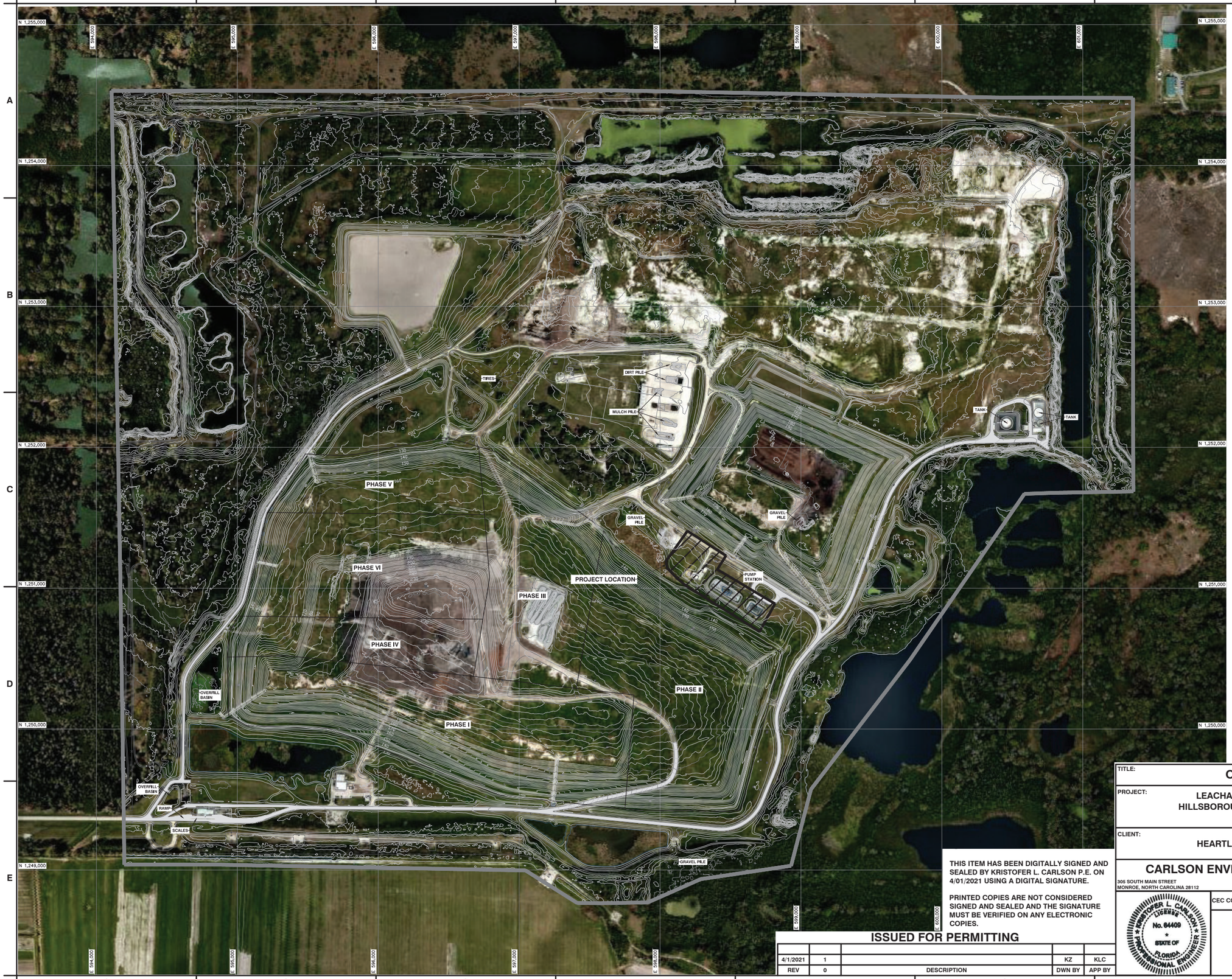
KRISTOFER L. CARLSON LICENSE No. 64409 STATE OF FLORIDA PROFESSIONAL ENGINEER



N

0 300 600 900

GRAPHIC SCALE (FEET)

LEGEND

- PROPERTY BOUNDARY
- 10 FT TOPOGRAPHIC CONTOUR LINE
- 2 FT TOPOGRAPHIC CONTOUR LINE
- CELL BOUNDARY

NOTES:

1. AERIAL TOPOGRAPHY COMPILED BY PICKETT AND ASSOCIATES, INC. BASED ON AERIAL TOPOGRAPHY FROM JULY 2020.

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ISSUED FOR PERMITTING

REV		DESCRIPTION	DWN BY	APP BY
4/1/2021	1		KZ	KLC
	0			

TITLE: **OVERALL SITE PLAN**

PROJECT: **LEACHATE EVAPORATOR INSTALLATION**
HILLSBOROUGH SOUTHEAST COUNTY LANDFILL
LITHIA, FLORIDA

CLIENT: **HEARTLAND WATER TECHNOLOGY, INC.**

CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

KRISTOFER L. CARLSON LICENSE No. 64409 STATE OF FLORIDA PROFESSIONAL ENGINEER

CEC COA#: 06000001370 | SCALE: 1"=300'

CEC

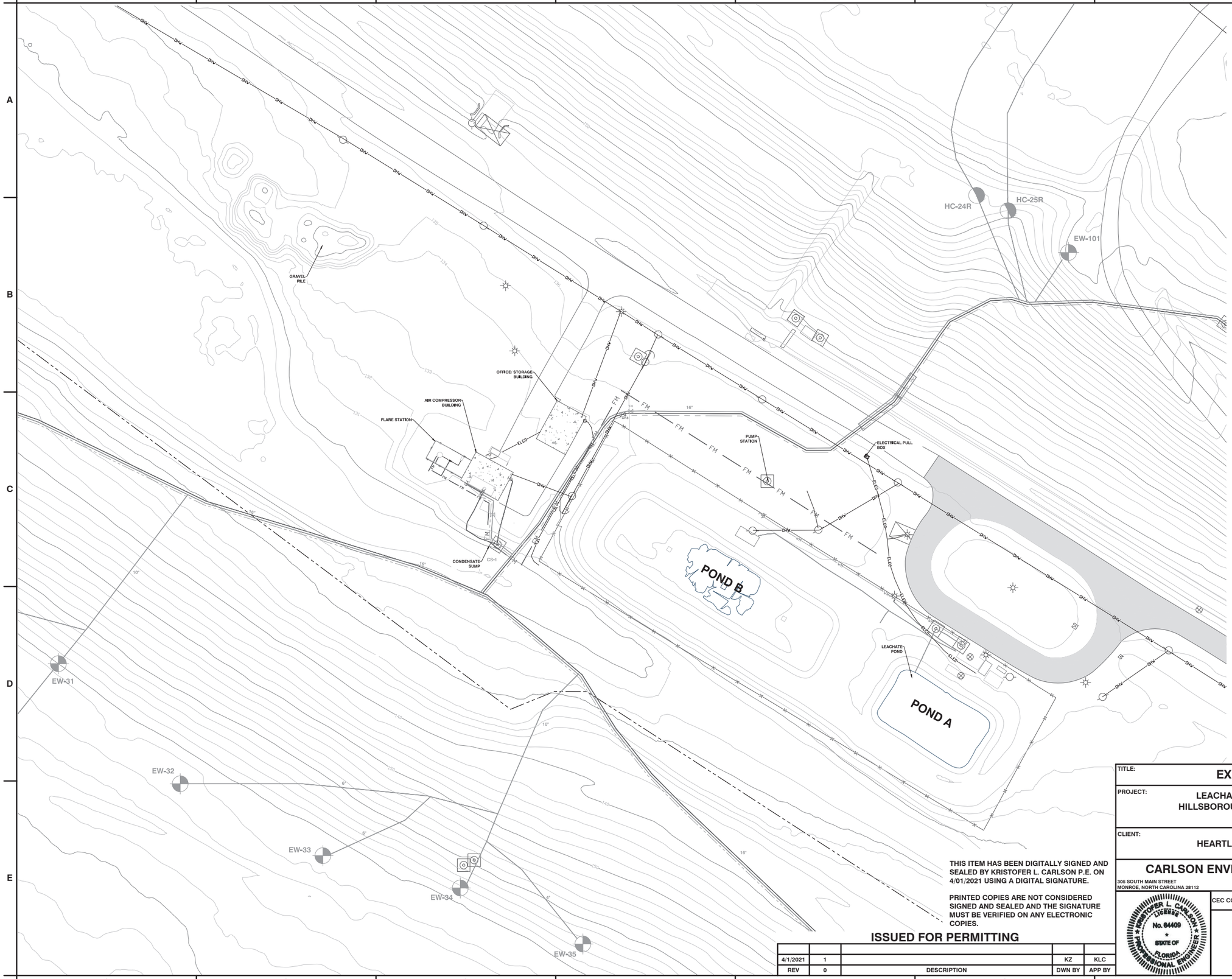
WWW.CECENV.COM

PROJECT NO.: 208.01.01

DWG: OVERALL SITE PLAN

DATE: DECEMBER 2020

SHEET NO.: 2 OF 8



LEGEND

- 10 FT TOPOGRAPHIC CONTOUR LINE
- 2 FT TOPOGRAPHIC CONTOUR LINE
- CELL BOUNDARY
- FENCE LINE
- LFG HEADER/LATERAL
- LFG FORCEMAIN LINE
- LFG AIRLINE
- GAS LINE
- ELECTRICAL LINE
- OVER HEAD WIRES
- WATER MAIN
- DIRECTION OF CONDENSATE/ DEWATERING LIQUID FLOW
- DIRECTION OF LANDFILL GAS FLOW
- EW-XXX — LFG EXTRACTION WELL
- HC-XXX — HORIZONTAL COLLECTOR VERTICAL BORING
- LFG ISOLATION VALVE
- AIR ISOLATION VALVE/ BLOWOFF
- LFG ROAD CROSSING
- CONCRETE PAD
- ELECTRIC POLE
- LIGHT POLE
- TELEPHONE PEDESTAL
- ELECTRICAL PULL BOX
- HOSE BIBB

NOTES:

1. AERIAL TOPOGRAPHY COMPILED BY PICKETT AND ASSOCIATES, INC. BASED ON AERIAL TOPOGRAPHY FROM JULY 2020.

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REV		DESCRIPTION	DWN BY	APP BY
4/1/2021	1		KZ	KLC
REV	0	DESCRIPTION	DWN BY	APP BY

TITLE: **EXISTING CONDITIONS**

PROJECT: **LEACHATE EVAPORATOR INSTALLATION**
HILLSBOROUGH SOUTHEAST COUNTY LANDFILL
LITHIA, FLORIDA

CLIENT: **HEARTLAND WATER TECHNOLOGY, INC.**

CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

KRISTOFER L. CARLSON LICENSE No. 64409 STATE OF FLORIDA PROFESSIONAL ENGINEER

CEC COA#: 06000001370 | SCALE: 1"=40'

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PROJECT NO.: 208.01.01
DWG: EXISTING CONDITIONS
DATE: DECEMBER 2020
SHEET NO.: 3 OF 8

IMPERVIOUS DRIVE 1: 1,424 S.F.
(NON-CONTAINED)

IMPERVIOUS CONTAINMENT PAD: 4,100 S.F.
(CONTAINED)

IMPERVIOUS AREA: 100 S.F.
(NON-CONTAINED)

IMPERVIOUS DRIVE 2: 444 S.F.
(NON -CONTAINED)

3" Ø CONDUIT LINE
MAIN DISTRIBUTION PANEL
FINISHED FLOOR ELEV. 135.00
HEARTLAND EQUIPMENT SKID
10 X 18 X 4 SUMP (UNDER EQUIPMENT)
CONCENTRATOR PANEL
ENCLOSED FLARE
CHEMICAL TANK (1,100 GAL)
WALL
SECANT PILE WALL
8" PERIMETER CONTAINMENT WALL (4/8)
RESIDUAL MANAGEMENT TANK (6,500 GAL EACH)
SECANT TANK (7,000 GAL)
SECANT RETAIN PUMP
10" SDR17 (1/8)
BACK-UP ELECTRICAL GENERATOR
FLARE STATION
2" HDPE SDR 11 CONDENSATE DISCHARGE LINE (TYP.)
2" MAX
16" HDPE SDR 17 HEADER
2" SDR 11 AIR SUPPLY LINE
2" HDPE SDR 11 CONDENSATE FORCEMAIN
2" HDPE SDR 11 DEWATERING DISCHARGE LINE
CONDUIT BUNDLE (2/8)
3" Ø LEACHATE FEED LINE
2" Ø RETURN LINE
PUMP STATION
3" SDR LINE (3/8)
ELECTRICAL PULL BOX
T&IN 2" HDPE SDR 11 CONDENSATE DISCHARGE LINE INTO EXISTING 3" FORCEMAIN WITH TEE
V-6
AV-8
CS-1
WATER T.B.D.
POND B

N

0 20 40 60
GRAPHIC SCALE (FEET)

LEGEND

- 10 FT TOPOGRAPHIC CONTOUR LINE
- 2 FT TOPOGRAPHIC CONTOUR LINE
- CELL BOUNDARY
- FENCE LINE
- EXISTING LFG HEADER/LATERAL
- EXISTING LFG FORCEMAIN LINE
- EXISTING LFG AIRLINE
- EXISTING GAS LINE
- EXISTING ELECTRICAL LINE
- EXISTING OVER HEAD WIRES
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- PROPOSED LFG HEADER
- PROPOSED CONTOUR
- POWER ROUTING LINE
- LEACHATE ROUTING LINE
- ETHERNET ROUTING LINE
- DIRECTION OF CONDENSATE/ DEWATERING LIQUID FLOW
- DIRECTION OF LANDFILL GAS FLOW
- LFG ISOLATION VALVE
- AIR ISOLATION VALVE/ BLOWOFF
- LFG ROAD CROSSING
- CONCRETE PAD
- ELECTRIC POLE
- LIGHT POLE
- TELEPHONE PEDESTAL
- ELECTRICAL PULL BOX
- HOSE BIBB

IMPERVIOUS AREAS (S.F.)	
DRIVE 1	1,424
DRIVE 2	444
CONTAINMENT PAD	4,100
TOTAL	5,968

NOTES:

1. AERIAL TOPOGRAPHY COMPILED BY PICKETT AND ASSOCIATES, INC. BASED ON AERIAL TOPOGRAPHY FROM JULY 2020.
2. CONTRACTOR IS RESPONSIBLE FOR DRAINAGE DURING THE FOUNDATION CONSTRUCTION
3. SLAB AND STRUCTURAL DETAILS TO BE PROVIDED SEPARATELY.

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY KRISTOFER L. CARLSON P.E. ON 4/01/2021 USING A DIGITAL SIGNATURE.

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REV		DESCRIPTION	DWN BY	APP BY
4/1/2021	1	UPDATED TANK SIZES,PERIMETER WALL HEIGHT AND SLOPE ARROWS	KZ	KLC
REV	0	DESCRIPTION	DWN BY	APP BY

TITLE: **PROPOSED CONDITION**

PROJECT: **LEACHATE EVAPORATOR INSTALLATION
HILLSBOROUGH SOUTHEAST COUNTY LANDFILL
LITHIA, FLORIDA**

CLIENT: **HEARTLAND WATER TECHNOLOGY, INC.**

CARLSON ENVIRONMENTAL CONSULTANTS, PC
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MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

KRISTOFER L. CARLSON LICENSE No. 64409 STATE OF FLORIDA PROFESSIONAL ENGINEER

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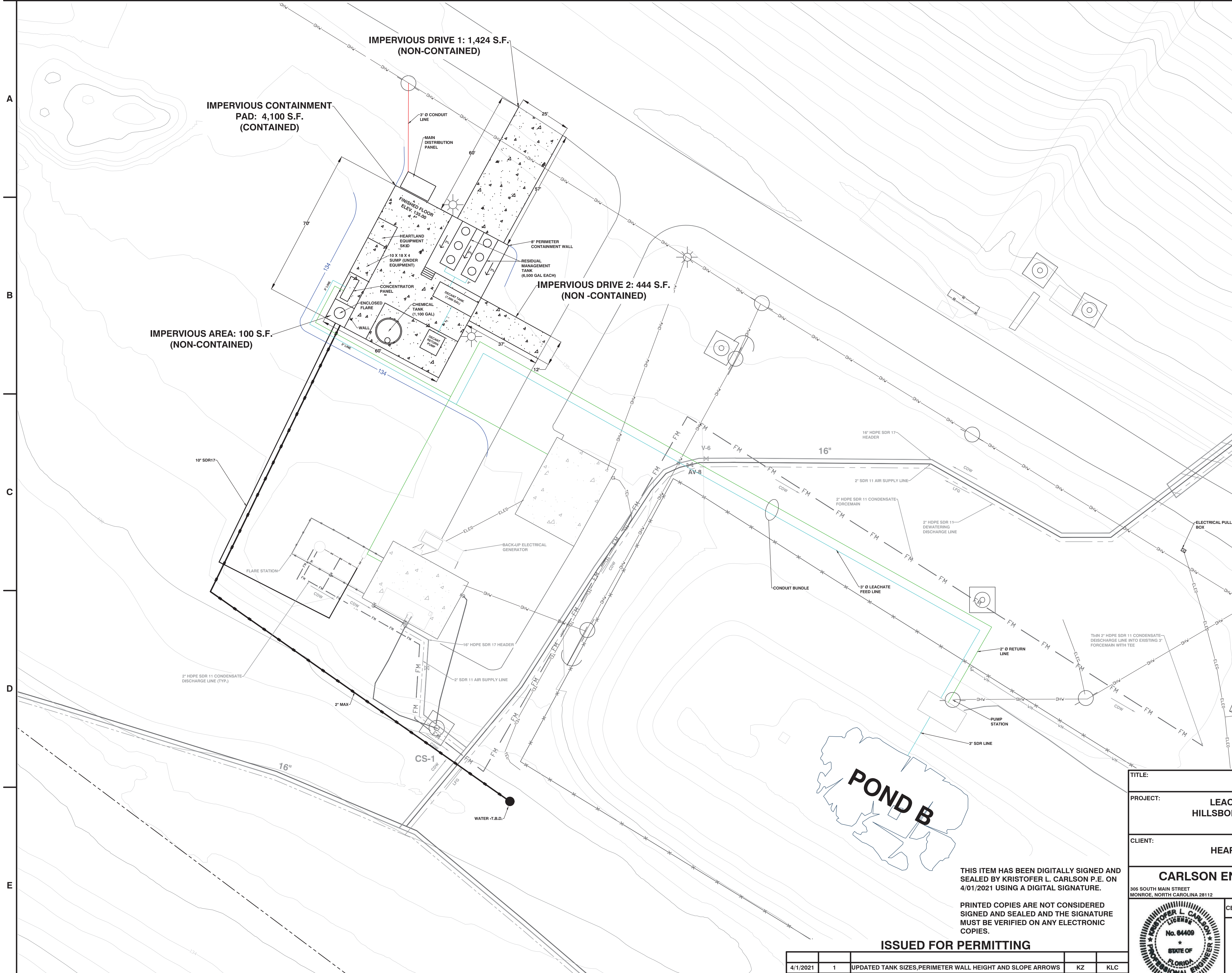
PROJECT NO.: 208.01.01
DWG: PROPOSED CONDITION
DATE: DECEMBER 2020
SHEET NO.: 4 OF 8



0 20 40 60
GRAPHIC SCALE (FEET)

LEGEND

- 10 FT TOPOGRAPHIC CONTOUR LINE
- 2 FT TOPOGRAPHIC CONTOUR LINE
- CELL BOUNDARY
- FENCE LINE
- EXISTING LFG HEADER/LATERAL
- EXISTING LFG FORCEMAIN LINE
- EXISTING LFG AIRLINE
- EXISTING GAS LINE
- EXISTING ELECTRICAL LINE
- EXISTING OVER HEAD WIRES
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- PROPOSED LFG HEADER
- PROPOSED CONTOUR
- POWER ROUTING LINE
- LEACHATE ROUTING LINE
- ETHERNET ROUTING LINE
- DIRECTION OF CONDENSATE/ DEWATERING LIQUID FLOW
- DIRECTION OF LANDFILL GAS FLOW
- LFG ISOLATION VALVE
- AIR ISOLATION VALVE/ BLOWOFF
- LFG ROAD CROSSING
- CONCRETE PAD
- ELECTRIC POLE
- LIGHT POLE
- TELEPHONE PEDESTAL
- ELECTRICAL PULL BOX
- HOSE BIBB

NOTES:

1. AERIAL TOPOGRAPHY COMPILED BY PICKETT AND ASSOCIATES, INC. BASED ON AERIAL TOPOGRAPHY FROM JULY 2020.
2. CONTRACTOR IS RESPONSIBLE FOR DRAINAGE DURING/AFTER THE FOUNDATION CONSTRUCTION
3. ELECTRICAL ROUTING AND DETAILS TO BE DETERMINED BY TECO. AND PROVIDED SEPARATELY.

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ISSUED FOR PERMITTING

4/1/2021	1	UPDATED TANK SIZES,PERIMETER WALL HEIGHT AND SLOPE ARROWS	KZ	KLC
REV	0	DESCRIPTION	DWN BY	APP BY

TITLE: **CONDUIT SCHEDULE**

PROJECT: LEACHATE EVAPORATOR INSTALLATION
HILLSBOROUGH SOUTHEAST COUNTY LANDFILL
LITHIA, FLORIDA

CLIENT: HEARTLAND WATER TECHNOLOGY, INC.

CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

KRISTOFER L. CARLSON LICENSE No. 64409 STATE OF FLORIDA PROFESSIONAL ENGINEER

CEC COA#: 06000001370 SCALE: 1"=20'

CEC
WWW.CECENV.COM

PROJECT NO.: 208.01.01
DWG: CONDUIT SCHELUDE
DATE: DECEMBER 2020
SHEET NO.: 5 OF 8

IMPERVIOUS DRIVE 1: 1,424 S.F.
(NON-CONTAINED)

IMPERVIOUS CONTAINMENT
PAD: 4,100 S.F.
(CONTAINED)

IMPERVIOUS DRIVE 2: 444 S.F.
(NON -CONTAINED)

IMPERVIOUS AREA: 100 S.F.
(NON-CONTAINED)

225 LF SILT FENCE

3" Ø CONDUIT LINE

MAIN DISTRIBUTION PANEL

FINISHED FLOOR ELEV. 125.00

HEARTLAND EQUIPMENT SKID

10 X 10 X 4 SUMP (UNDER EQUIPMENT)

CONCENTRATOR PANEL

ENCLOSED FLARE

CHEMICAL TANK (1,100 GAL)

WALL

GEOMAT RETAINING WALL

6" PERIMETER CONTAINMENT WALL

RESIDUAL MANAGEMENT TANK (6,500 GAL EACH)

GEOMAT TANK (7,500 GAL)

10" SDR17

FLARE STATION

BACK-UP ELECTRICAL GENERATOR

16" HDPE SDR 17 HEADER

2" SDR 11 AIR SUPPLY LINE

2" HDPE SDR 11 CONDENSATE DISCHARGE LINE (TYP.)

2" MAX

CS-1

16"

WATER

V-6

AV-8

16" HDPE SDR 17 HEADER

2" SDR 11 AIR SUPPLY LINE

2" HDPE SDR 11 CONDENSATE FORCEMAIN

2" HDPE SDR 11 DEWATERING DISCHARGE LINE

ELECTRICAL PULL BOX

CONDUIT BUNDLE

3" Ø LEACHATE FEED LINE

2" Ø RETURN LINE

PUMP STATION

3" SDR LINE

TWIN 2" HDPE SDR 11 CONDENSATE DISCHARGE LINE INTO EXISTING 3" FORCEMAIN WITH TEE

POND B

N

0 20 40 60

GRAPHIC SCALE (FEET)

LEGEND

- 10 FT TOPOGRAPHIC CONTOUR LINE
- 2 FT TOPOGRAPHIC CONTOUR LINE
- CELL BOUNDARY
- FENCE LINE
- EXISTING LFG HEADER/LATERAL
- EXISTING LFG FORCEMAIN LINE
- EXISTING LFG AIRLINE
- EXISTING GAS LINE
- EXISTING ELECTRICAL LINE
- EXISTING OVER HEAD WIRES
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- PROPOSED LFG HEADER
- PROPOSED CONTOUR
- POWER ROUTING LINE
- LEACHATE ROUTING LINE
- ETHERNET ROUTING LINE
- SILT FENCE
- DIRECTION OF CONDENSATE/ DEWATERING LIQUID FLOW
- DIRECTION OF LANDFILL GAS FLOW
- LFG ISOLATION VALVE
- AIR ISOLATION VALVE/ BLOWOFF
- LFG ROAD CROSSING
- CONCRETE PAD
- ELECTRIC POLE
- LIGHT POLE
- TELEPHONE PEDESTAL
- ELECTRICAL PULL BOX
- HOSE BIBB
- DRAINAGE FLOW

NOTES:

1. AERIAL TOPOGRAPHY COMPILED BY PICKETT AND ASSOCIATES, INC. BASED ON AERIAL TOPOGRAPHY FROM JULY 2020.
2. CONTRACTOR IS RESPONSIBLE FOR DRAINAGE DURING THE FOUNDATION CONSTRUCTION
3. DISTURBED AREAS TO BE REPAIRED, SEEDED AND STRAWED UPON COMPLETION.

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4/1/2021	1	UPDATED TANK SIZES,PERIMETER WALL HEIGHT AND SLOPE ARROWS	KZ	KLC
REV	0	DESCRIPTION	DWN BY	APP BY

TITLE: **EROSION AND SEDIMENT PLAN**

PROJECT: **LEACHATE EVAPORATOR INSTALLATION**
HILLSBOROUGH SOUTHEAST COUNTY LANDFILL
LITHIA, FLORIDA

CLIENT: **HEARTLAND WATER TECHNOLOGY, INC.**

CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9765
FAX (704) 283-9755

KRISTOFER L. CARLSON LICENSED No. 64409 STATE OF FLORIDA PROFESSIONAL ENGINEER

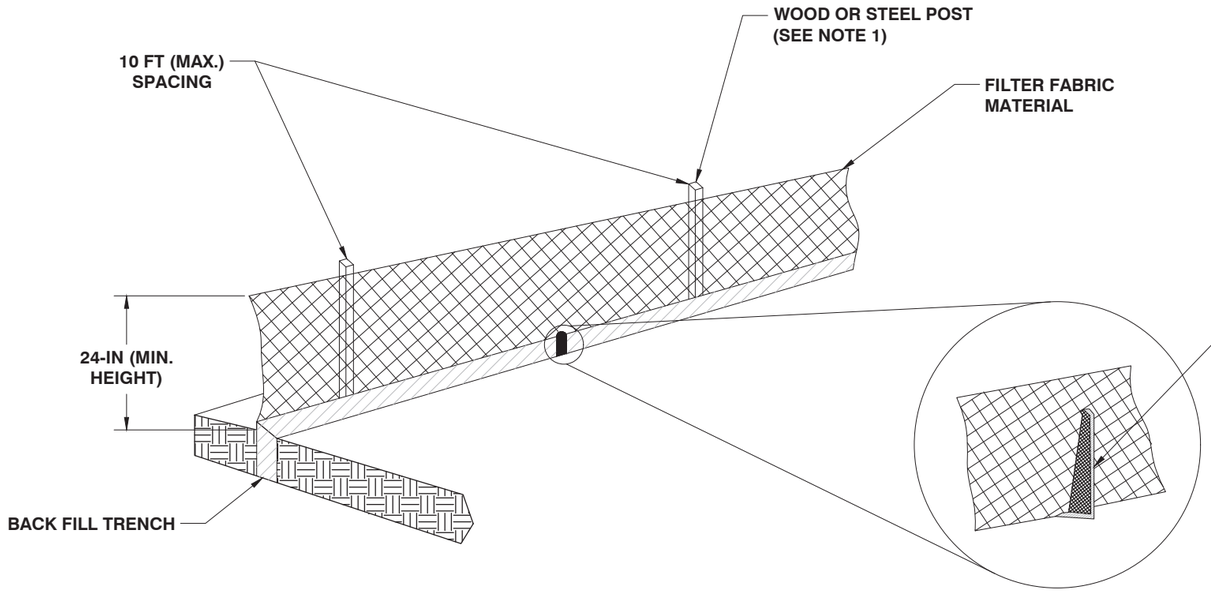
CEC COA#: 06000001370 | SCALE: 1"=20' | PROJECT NO.: 208.01.01

DWG: E & S PLAN

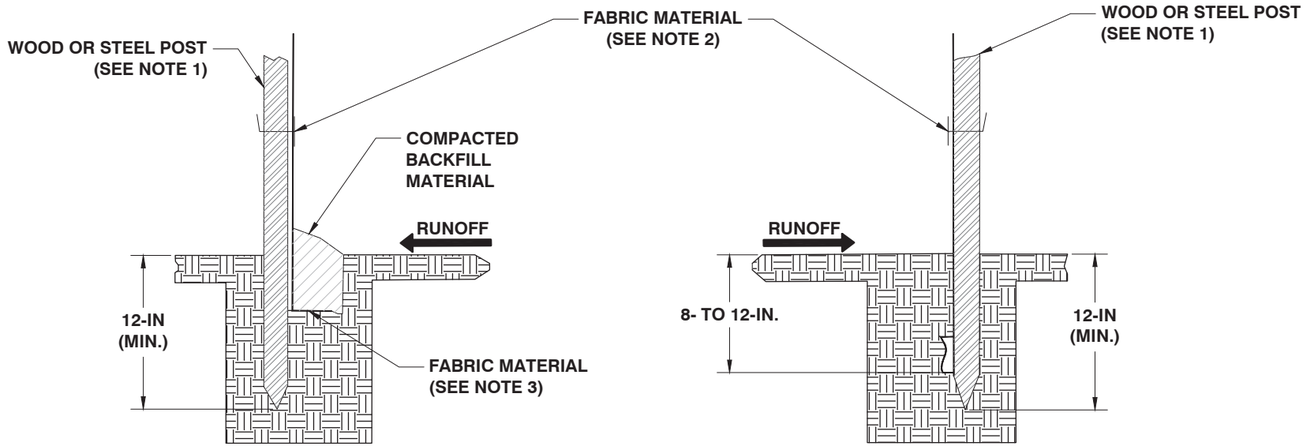
DATE: DECEMBER 2020

SHEET NO.: 6 OF 8

WWW.CECENV.COM



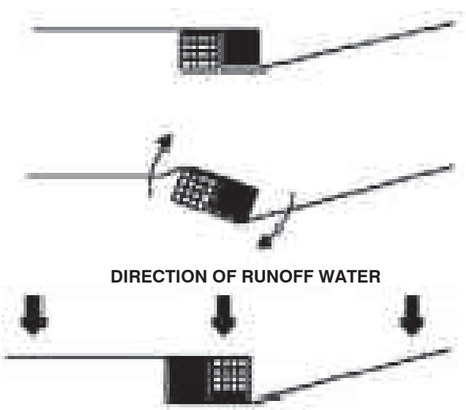
1/7 SILT FENCE DETAILS
NOT TO SCALE



TRENCHING METHOD

SLICING METHOD

ATTACHING TWO SILT FENCES WHEN TRENCHING IS USED



NOTES:

1. WOOD OR STEEL POST MUST BE INSTALLED BEFORE COMPACTING BACK FILL MATERIAL.
2. FABRIC MATERIAL MUST BE SECURELY FASTENED TO THE POSTS OR (IF USED) TO THE WIRE MESH.
3. FABRIC MATERIAL MUST BE PLACED IN A 6-IN X 6-IN TRENCH WITH A "L" SHAPE BEFORE BACKFILLING AND COMPACTING THE SOIL.

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REV		DESCRIPTION	DWN BY	APP BY
4/1/2021	1	UPDATED WALL DETAIL	KZ	KLC
REV	0	DESCRIPTION	DWN BY	APP BY

TITLE: EROSION AND SEDIMENT DETAILS

PROJECT: LEACHATE EVAPORATOR INSTALLATION
HILLSBOROUGH SOUTHEAST COUNTY LANDFILL
LITHIA, FLORIDA

CLIENT: HEARTLAND WATER TECHNOLOGY, INC.

CARLSON ENVIRONMENTAL CONSULTANTS, PC
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(704) 283-9765
FAX (704) 283-9755

KRISTOFER L. CARLSON LICENSED No. 64409 STATE OF FLORIDA PROFESSIONAL ENGINEER

CEC COA#: 06000001370 | SCALE: NTS | PROJECT NO.: 208.01.01
DWG: E & S DETAILS
DATE: DECEMBER 2020
SHEET NO.: 7 OF 8

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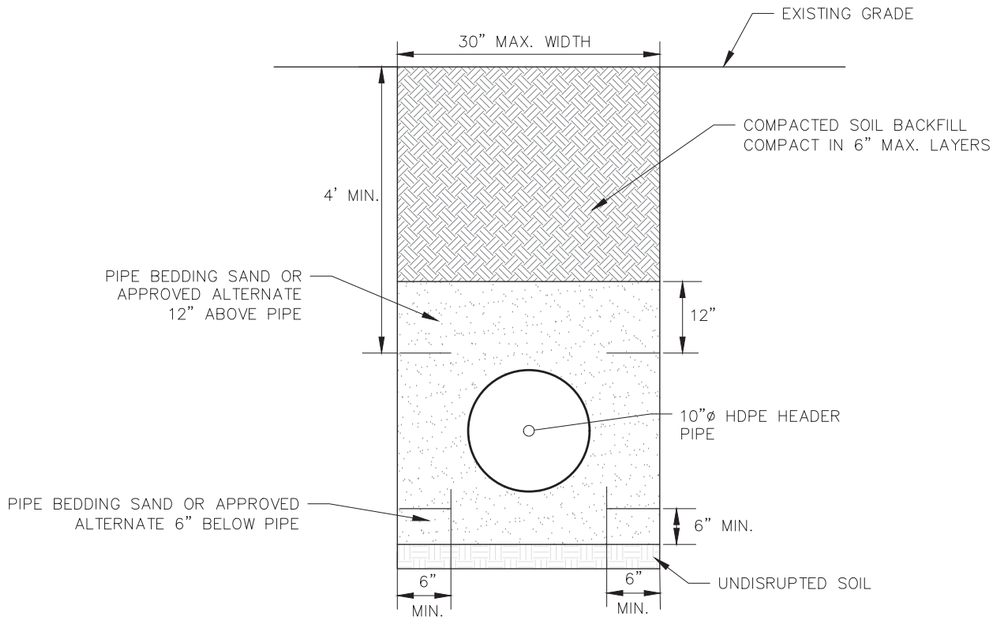
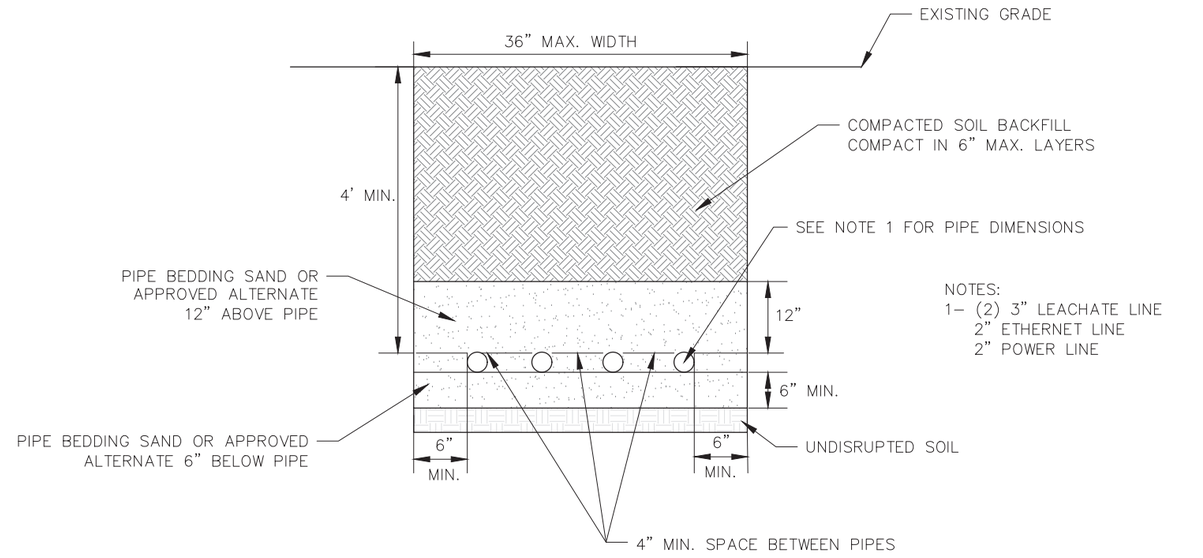


HEADER TRENCH (TYP.) 1/8

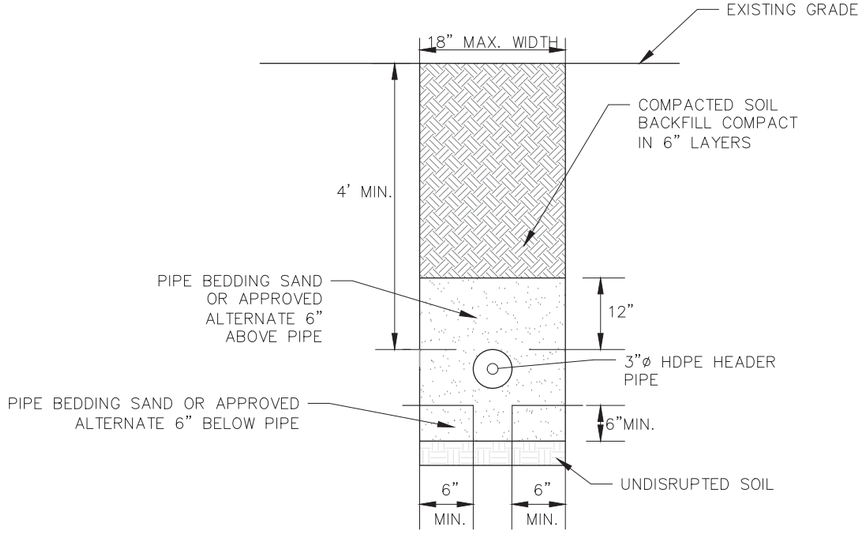
NOT TO SCALE



NOTES:
1– (2) 3" LEACHATE LINE
2" ETHERNET LINE
2" POWER LINE

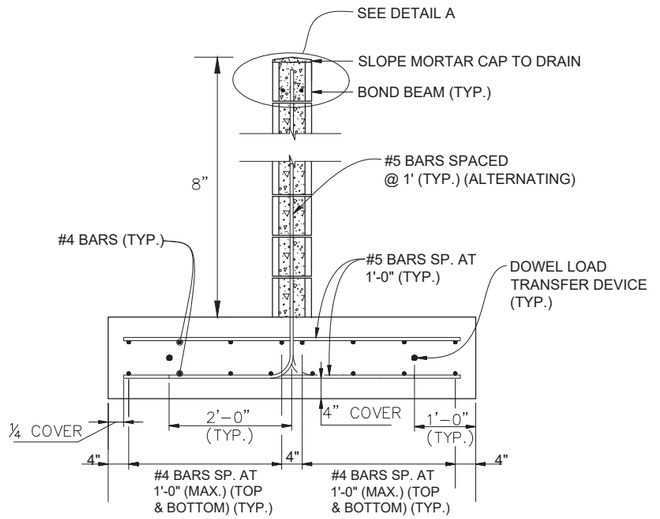
CONDUIT BUNDLE 2/8

NOT TO SCALE



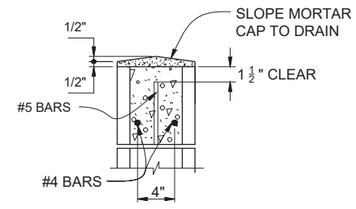
3" HDPE CONCENTRATOR LINE 3/8

NOT TO SCALE



8" PERIMETER CONTAINMENT WALL 4/8

NOT TO SCALE



DETAIL A

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4/1/2021	1	UPDATED WALL DETAIL	KZ	KLC
REV	0	DESCRIPTION	DWN BY	APP BY

TITLE: **TRENCH & WALL DETAILS**

PROJECT: **LEACHATE EVAPORATOR INSTALLATION**
HILLSBOROUGH SOUTHEAST COUNTY LANDFILL
LITHIA, FLORIDA

CLIENT: **HEARTLAND WATER TECHNOLOGY, INC.**

CARLSON ENVIRONMENTAL CONSULTANTS, PC
305 SOUTH MAIN STREET
MONROE, NORTH CAROLINA 28112
(704) 283-9768
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KRISTOFER L. CARLSON LICENSE No. 64409 STATE OF FLORIDA PROFESSIONAL ENGINEER

CEC COA#: 06000001370 | SCALE: NTS | PROJECT NO.: 208.01.01

DWG: TRENCH & WALL DETAILS

DATE: DECEMBER 2020

SHEET NO.: 8 OF 8

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ATTACHMENT 3

Secondary Containment Capacity Calculations (prepared and provided by others)

Hillsborough County - Evaporator Project - Containment Calculations

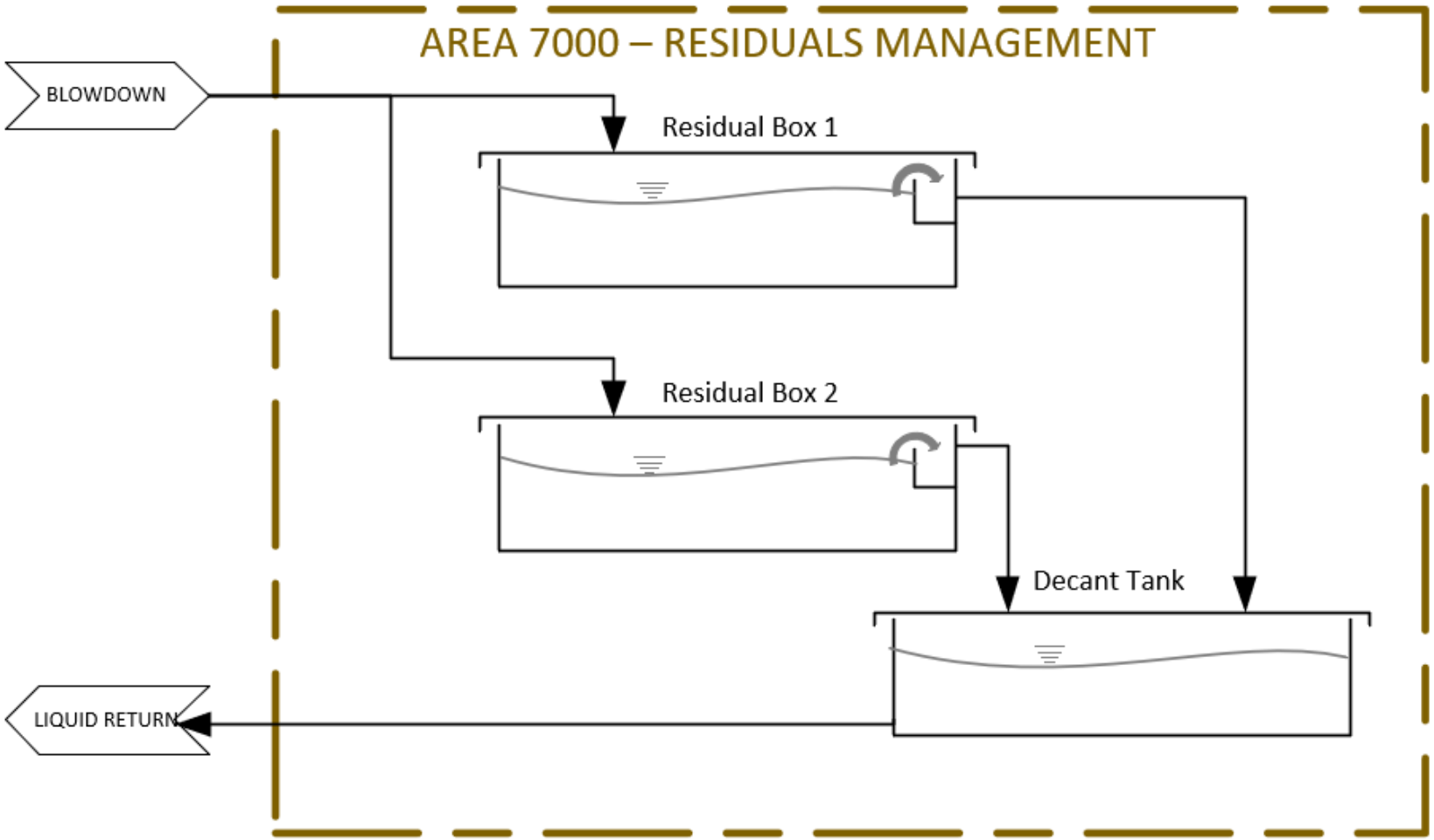
Overall Pad Area	
Length	70 ft.
Width	60 ft.
Area	4200 $ft.^2$
Elevated Area	
Length	30 ft.
Width	29 ft.
Area	870 $ft.^2$
Chemical Containment Area & Volume	
Length	29 ft.
Width	9 ft.
Area	261 $ft.^2$
Curb Height	8 in.
Volume	174 $ft.^3$
Volume	**1302 gallons**
Effective Overall Containmetnt Area Overall - (Elevated + Chemical Containment)	
$Area_{eff}$	3069 $ft.^2$
Curb Height	8 in.
Total Containment Volume	
Volume	2046 $ft.^3$
Volume	**15304 gallons**

Chemical Containment Area Volume Requirements	
• One-1,100 gallon tank	
110% of Largest Tank Volume =	1,210 gallons
Containment Area Volume =	1,302 gallons
Result =	**PASS**

Process Area Volume Requirements	
• Two – 6,500 gallon Residuals Management Tanks • One – 7,000 gallon Decant Tank • Five – 330 Gallon Totes	
110% of Largest Tank Volume =	7,700 gallons
Containment Area Volume =	15,304 gallons
Result =	**PASS**
Residuals Management Tanks and the Decant Tank are not considered hydraulically connected and failure of one would not result in release of another tank's contents; however, the Process Area Containment Volume exceeds 110% of the Residuals Management Tank volume plus the Decant Tank volume (only one Residuals Management Tank connected at a time to the Decant Tank).	

ATTACHMENT 4

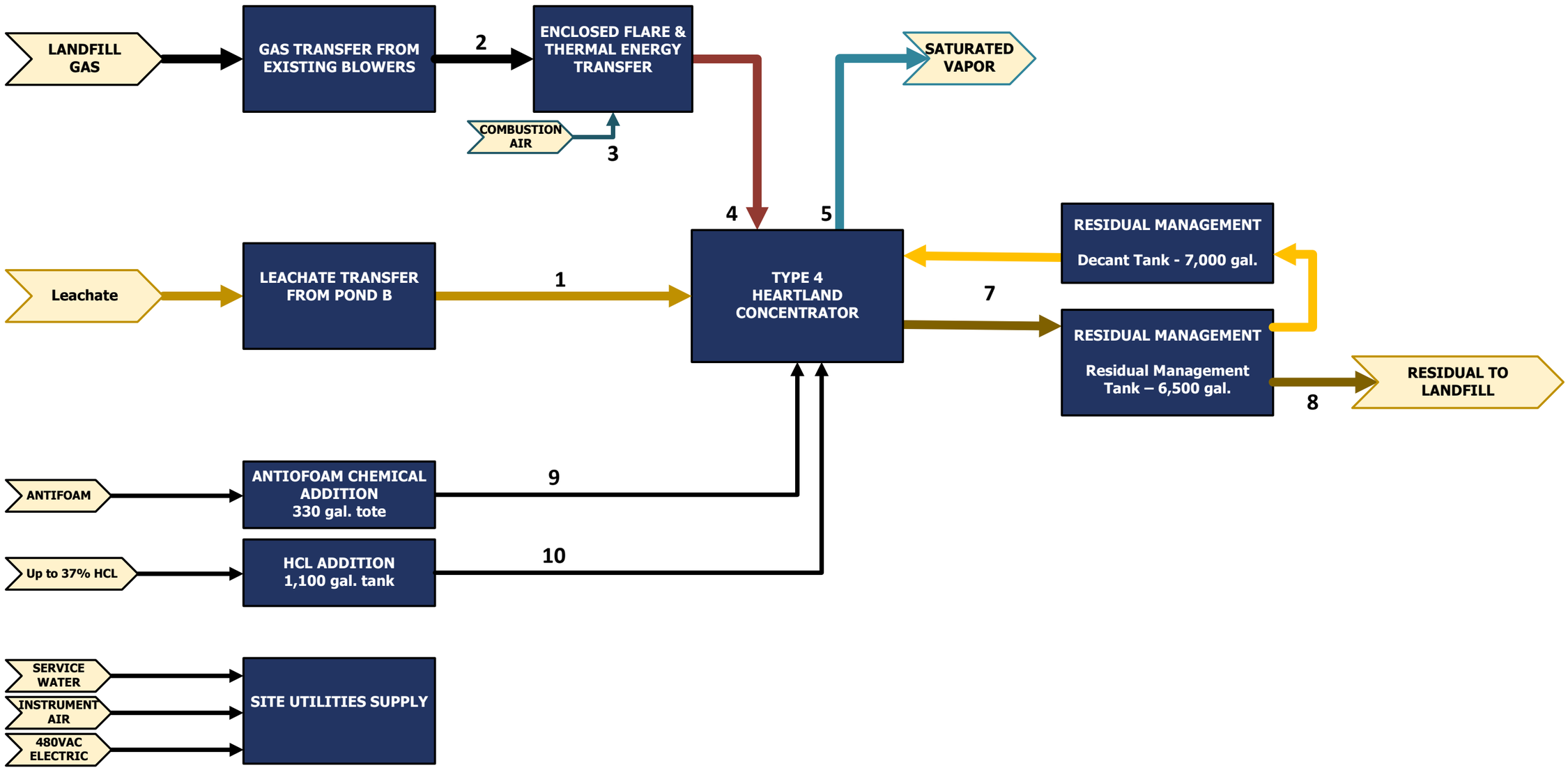
Residuals Management Tanks and Decant Tank Flow Diagram (prepared and provided by others)


AREA 7000 – RESIDUALS MANAGEMENT
BLOWDOWN
Residual Box 1
Residual Box 2
Decant Tank
LIQUID RETURN

ATTACHMENT 5

Revised LEF Block Flow Diagram (prepared and provided by others)

Hillsborough County – Southeast Landfill
Heartland Brine Concentrator Project - Block Flow Diagram
Rev. 1



Hillsborough County – Southeast Landfill
Heartland Brine Concentrator Project

Process Description

1. Raw leachate is continuously fed from the leachate storage Pond B to the Concentrator via a leachate transfer pump

2. Landfill gas supplied from landfill through existing blowers and sent to a new enclosed flare where it is combusted at a temperature of 1,400–1800°F to ensure destruction efficiency of organic compounds. Any excess gas will be burned in an existing candlestick flare.

3. The hot combustion gases are tempered to 800–1,000°F in the hot gas transfer duct before being directed to the Heartland Concentrator.

4. The Heartland Concentrator mixes hot gas with wastewater in an adiabatic evaporation process. The resultant vapor is near saturation with water and will be at temperatures of 120–180°F.

5. The near-saturated gas passes through a high-efficiency, multi-stage mist entrainment separator before passing through an induced draft fan and discharging out of a vertical stack.

6. The concentrated leachate continuously circulates from the Concentrator sump and is returned to the evaporation zone for further concentration.

7. A side stream of the concentrated leachate is circulated through a residuals refinement process (i.e., residual roll-off boxes and decant tank).

8. The refined residual is periodically pulled out of the system by HC-SELF and sprayed on the working face in accordance with dust control methods approved in the current Leachate Management Plan using trucks and residual roll-off boxes

9. An antifoaming agent is mixed into the leachate through a process line. As the leachate concentrates and is agitated through the process, it creates a foam which can be problematic for the process. This chemical suppresses foam produced as part of the concentration process.

10. Up to 37% HCL is mixed into the leachate through a process line. As the leachate concentrates, solids/scales can accumulate in process piping, instruments, and components. The HCL helps reduce the accumulation.

ATTACHMENT 6

Revised LMP with Revisions Identified in Redline and Strikeout

Leachate Management Plan
Phases I-VI and The Capacity Expansion Area
Southeast County Landfill
Hillsborough County, Florida

Hillsborough County - Public Utilities Department
Solid Waste Management Group (SWMG)
332 N. Falkenburg Road
Tampa, FL 33619

SCS ENGINEERS

09215600.12 | April 2021

3922 Coconut Palm Drive, Suite 102
Tampa, FL 33619
813-621-0080

LEACHATE MANAGEMENT PLAN
PHASES I-VI AND THE
CAPACITY EXPANSION AREA

Southeast County Landfill
Hillsborough County, Florida

Presented to:

Hillsborough County
Public Utilities Department
Solid Waste Management Group (SWMG)
332 N. Falkenburg Road
Tampa, FL 33619

Prepared by:

SCS ENGINEERS
3922 Coconut Palm Drive, Suite 102
Tampa, FL 33619
(813) 621-0080

April 2021
File No. 09215600.12

Kollan L. Spradlin, P.E.
FL Reg. No. 82852

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Figures

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Appendices

1.0 LEACHATE MANAGEMENT

The Hillsborough County Southeast County Facility (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), Florida Administrative Code (FAC), leachate is liquid that has passed through or emerged from solid waste and may contain soluble, suspended, or miscible 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 leachate storage tank or the leachate/effluent storage pond (Pond B). From the storage tank the leachate can be conveyed to the on-site Leachate Treatment and Reclamation Facility (LTRF) for treatment or hauled off site for treatment and disposal at a permitted wastewater treatment facility. Leachate may also be conveyed from Pond B to the Leachate Evaporator Facility (LEF) for volume reduction. Liquids, including precipitation, collected on the LEF containment pad and liquid residuals from the volume reduction process will be treated as leachate.

In addition, leachate is generated in the form of condensate from the collection of landfill gas (LFG) 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 LFG condensate collection and transmission are not addressed in the leachate management plan, condensate management is addressed within the Gas Collection and Control System (GCCS) 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 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) tied into the waste phosphatic clay layer as a side containment liner barrier.

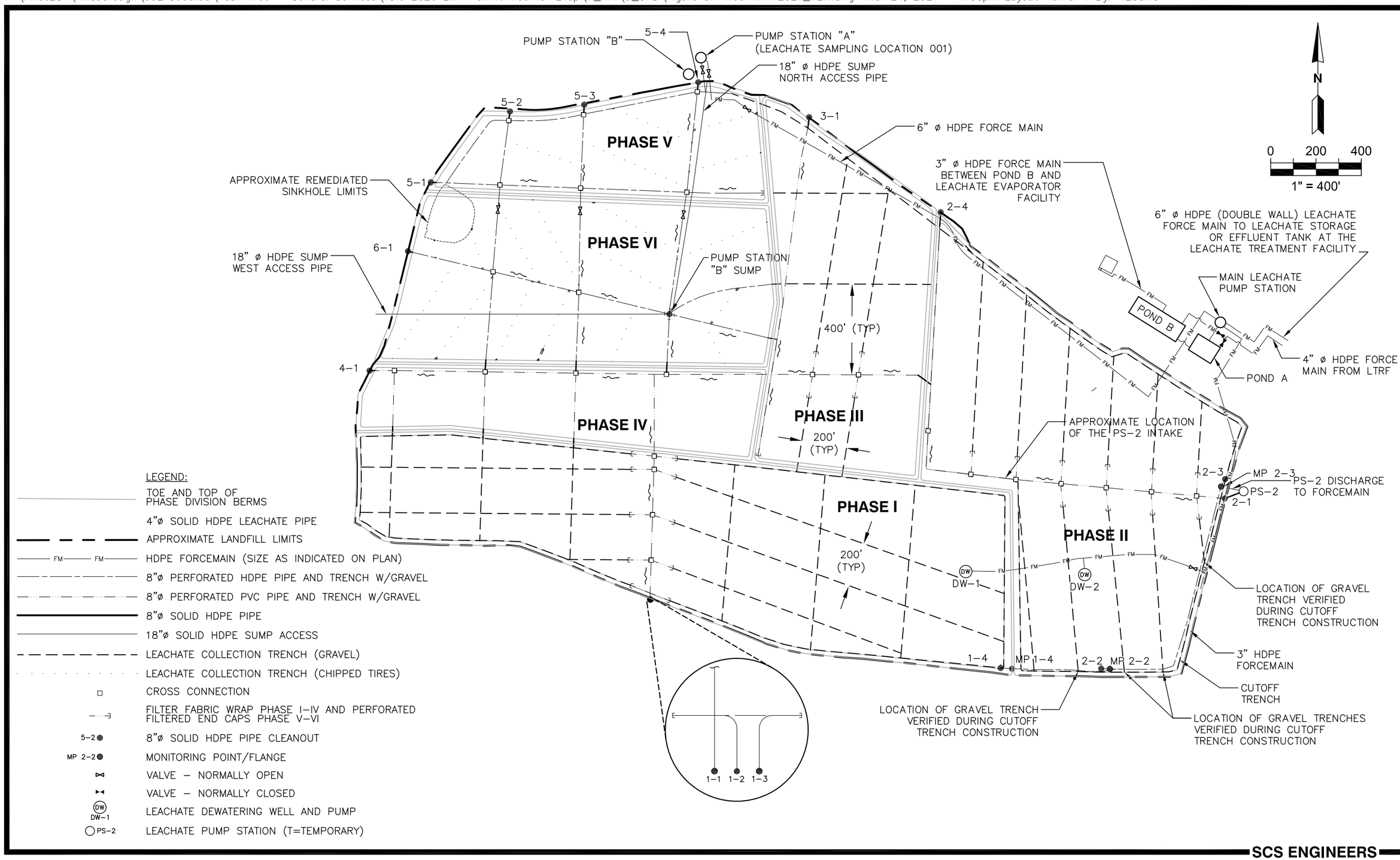
The leachate collection and removal system for Phases I-VI consists of crushed granite rock and tire-chip-filled trenches, 8-inch diameter perforated Schedule 80 polyvinyl chloride (PVC) pipes in granite rock-filled trenches, and 8-inch diameter perforated high density polyethylene (HDPE) pipes in granite 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.

3.2 CAPACITY EXPANSION AREA LEACHATE COLLECTION

3.2.1 Section 7

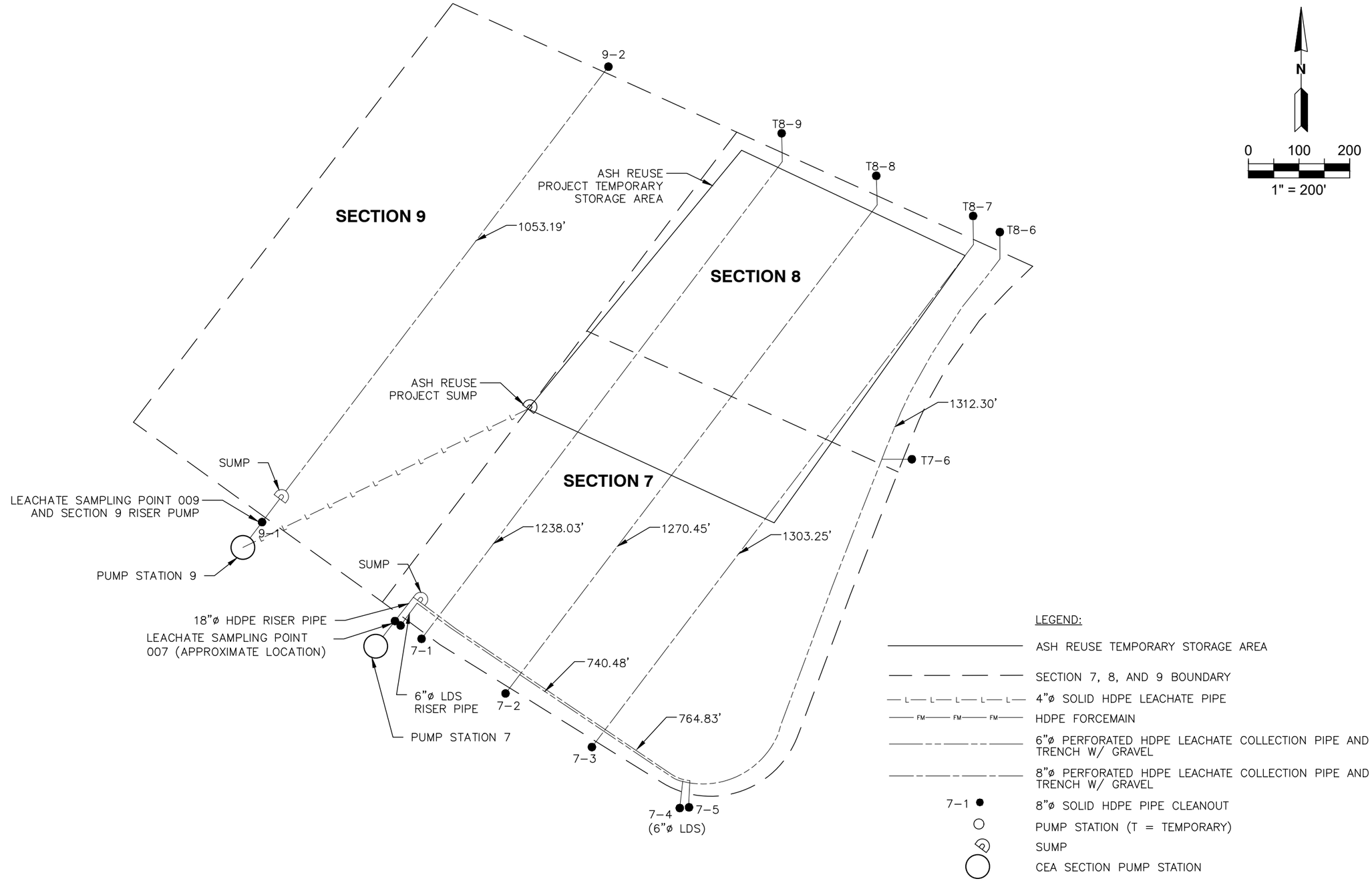
3.2.1.1 Leachate Collection System

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.



SCS ENGINEERS

FIGURE 3–1. PHASES I–VI LEACHATE COLLECTION AND REMOVAL SYSTEM
HILLSBOROUGH COUNTY
APRIL 2021



SCS ENGINEERS

FIGURE 3–2. CAPACITY EXPANSION AREA (SECTIONS 7, 8, AND 9) – LEACHATE COLLECTION AND REMOVAL SYSTEM
HILLSBOROUGH COUNTY
APRIL 2021

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 9.3.2.

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.

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 Leachate Collection and Removal System (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 9.3.2.

3.3 BIOSOLIDS COMPOSTING FACILITY LEACHATE COLLECTION

The SWMG operates a Biosolids Composting Facility (BCF) at the Facility. BCF operations are permitted under the Hillsborough County Falkenburg Road Advanced Wastewater Treatment Facility (WWTF) Domestic Wastewater Facility Permit Number FL0040614 and is managed in accordance with the current *Biosolids Composting Facility Operations and Maintenance Plan,* which is maintained on site. The BCF Building and the Biosolids Receiving Area are curbed to contain residual moisture. Stormwater runoff that enters the BCF Building or the Biosolids Receiving Area will be treated as leachate. The leachate is conveyed to two 25,000 gallon storage tanks located at the BCF. Leachate hauling tankers transport the BCF leachate to a permitted disposal facility.

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 or Pond B.

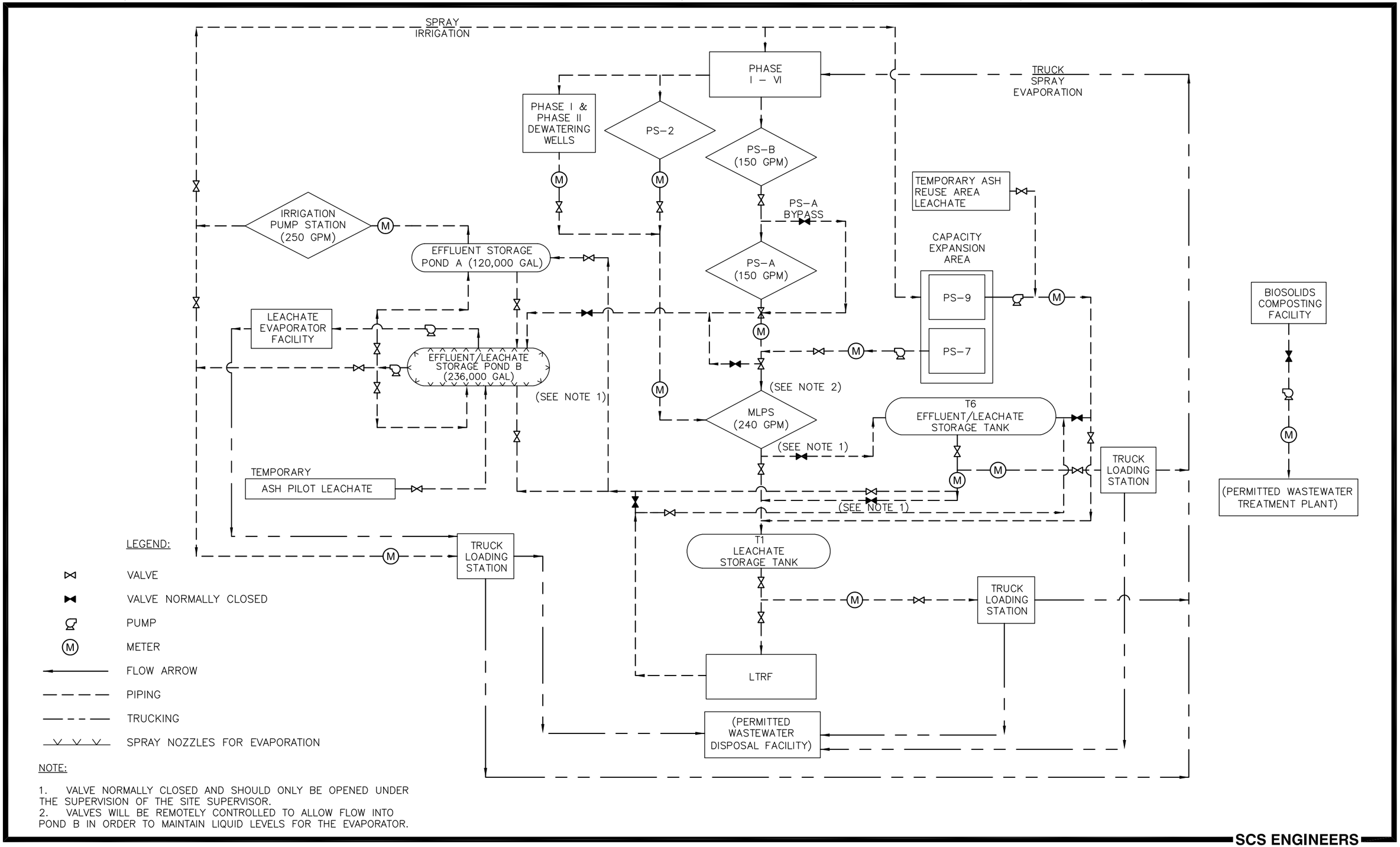
4.1.2 Pump Station B (PS-B)

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 pumps used to remove leachate from the PS-B sump are self-priming pumps each with a capacity of 150 gallons per minute (gpm). If the primary pumps fail, the operations contractor can obtain a secondary 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.

PS-B pumps leachate to PS-A via a vacuum-assisted pump. The PS-B pump is controlled by a bubbler liquid level measurement system with an "on" sensor is set at the PS-B maintenance level reading of 30-inches, and the "off" sensor is set at 15 inches from the bottom. The PS-B maintenance levels and operational procedures are outlined in **Table 9.2.4**. The settings provide for free flow of leachate into the landfill lower sump area from the surrounding Phase I-VI disposal areas.



NOTE:

1. VALVE NORMALLY CLOSED AND SHOULD ONLY BE OPENED UNDER THE SUPERVISION OF THE SITE SUPERVISOR.
2. VALVES WILL BE REMOTELY CONTROLLED TO ALLOW FLOW INTO POND B IN ORDER TO MAINTAIN LIQUID LEVELS FOR THE EVAPORATOR.

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FIGURE 4-1. LEACHATE MANAGEMENT SYSTEM SCHEMATIC
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4.1.3 Pump Station 2 (PS-2)

Pump Station 2 (PS-2) consists of a vacuum assisted pump with a 3-inch HDPE suction line into the Phase II clean out 2-1 (CO 2-1). The PS-2 pump is controlled with a liquid level indicator located adjacent to the intake pipe, within the CO 2-1 header. The pump discharges via a 3-inch HDPE buried forcemain directly into the MLPS. The pump will be operated by SWMG staff to supplement leachate removal from Phase II of the landfill and the Phase II Cut-off Trench. The primary goal of this pump is to maintain the leachate level in the Monitoring Port No. 2 (MP 2-2) and the CO 2-1 header below 30-inches. The CO 2-1 connection to the Phase II Cut-off Trench and the Phase II header allows PS-2 to influence the liquid level in MP 2-2. The leachate quantities pumped from CO 2-1 via the PS-2 pump will be recorded by an electronic flow meter.

4.1.4 Dewatering Wells

Dewatering wells were installed to provide supplemental leachate removal from Phases I and II. One well nest was installed in Phase I and one in Phase II. Each well nest consists of two 8-inch diameter HDPE well casings set within one 36-inch diameter borehole that spans from ground surface, through the waste, to 1-foot below the top of the clay liner. Each of the well casings contains a pneumatic pump connected to a 3-inch diameter HDPE buried forcemain conveying the leachate to the MLPS. The wells are topped with an all-weather polyethylene dual extraction well cap and 2-inch LFG wellhead. The Phase I leachate extraction wells are designated DW 1-1 and DW 1-2, and the Phase II leachate extraction wells are designated DW 2-1 and DW 2-2. The pneumatic pump counters will estimate the leachate quantities.

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 or Pond B via an underground force main.

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.

4.2.2 Section 8 – (No Pumping Systems)

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 or Pond B.

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 leachate storage tank (T1) or effluent/leachate storage tank (T6) 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.

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, PS-B, PS-2, and all pneumatic pumps. 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). 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.

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 bottom of the tank) or 173,000 gallons to ensure that enough leachate is available for the LTRF to operate 3 days 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 bottom 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 17.5 feet) in the leachate storage tank (T1), the LTRF will continue to operate, and the MLPS, PS-9, 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. 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.

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. 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.

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.

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 or a permitted wastewater treatment and disposal facility listed in **Table 8.6.2**. 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 (T1) 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 standard and special setting conditions are applicable to T6:

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 or the truck loading area (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 (T1) (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 control panel is mounted in a highly visible location on the exterior of the tank. When the high-level alarm condition occurs (at 17.5 feet), a visual and audible alarm (a light and horn) located at the control panel 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 treatment at the on-site LTRF, volume reduction at the LEF, hauling of raw leachate via tanker truck to a permitted WWTF, 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 permitted WWTF.

8.1 EFFLUENT STORAGE POND

The effluent storage pond (Pond A) receives treated leachate (effluent) from the LTRF or the effluent/leachate storage tank (T6). The pond is 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 standard and special setting conditions are applicable at Effluent Storage Pond A:

1. Pump effluent from Pond A to spray irrigation system (standard condition).
2. Pump effluent from Pond A to truck loading arm (standard condition).
3. Recirculate effluent in Pond A to stabilize pH (special condition).

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~~west of 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 storage of effluent and leachate mixture for volume reduction at the LEF. ~~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.~~The leachate and effluent mixture is pumped from Pond B to the LEF for volume reduction processing. Diversion of PS-A and PS-7 leachate from the MLPS to Pond B is controlled by a telemetry system that utilizes liquid level measurement devices and automatic valve controls to maintain the Pond B depth with at least one foot of freeboard.

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 standard and special setting conditions are applicable at Effluent/Leachate Storage Pond B:

1. Effluent and leachate mixture storage and spray evaporation operation in Pond B (standard practice).
2. ~~Effluent and l~~Leachate mixture storage in Pond B for conveyance to the LEF for volume reduction processing (standard practice) ~~(special condition)~~.
3. ~~Resuming effluent storage in Pond B following leachate storage (special condition).~~

8.2.1 ~~Pilot Ash Reuse Leachate~~Temporary Ash Storage Area

The SWMG operates a temporary ash-reuse project on top of ~~Phase III~~Section 7 and Section 8 of the CEA. The project is managed in accordance with the "Temporary Ash Aggregate Screening and Storage Project Operation & Maintenance Plan" dated August 2017. The runoff within the project bermed area is treated as leachate and drains into a sump. The sump is connected to a diesel vacuum assisted pump. The pump discharge is routed within an aboveground HDPE pipe to ~~the double lined Pond B~~Pump Station 9 (PS-9). ~~All liquids in Pond B are either pumped into trucks to be hauled to a WWTP or pumped (via MLPS)~~ and subsequently to the LTRF for on-site treatment or loaded into tankers for disposal at a permitted facility listed in Table 8.6.2. The ash will be beneficially reused at the Northwest Transfer Station (NWTS) design-build project. At the completion of this project, the diesel pump, berms, and HDPE pipe will be removed.

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

The SWMG operates a mobile irrigation system consisting of two irrigation reels. 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. Additionally, **Figure 8-2** depicts a conceptual irrigation reel position on the north side of Section 7 of the CEA. These locations are shown for information purposes only since the position will change due to operational constraints with waste filling. Only effluent will be disposed of through the spray irrigation system.

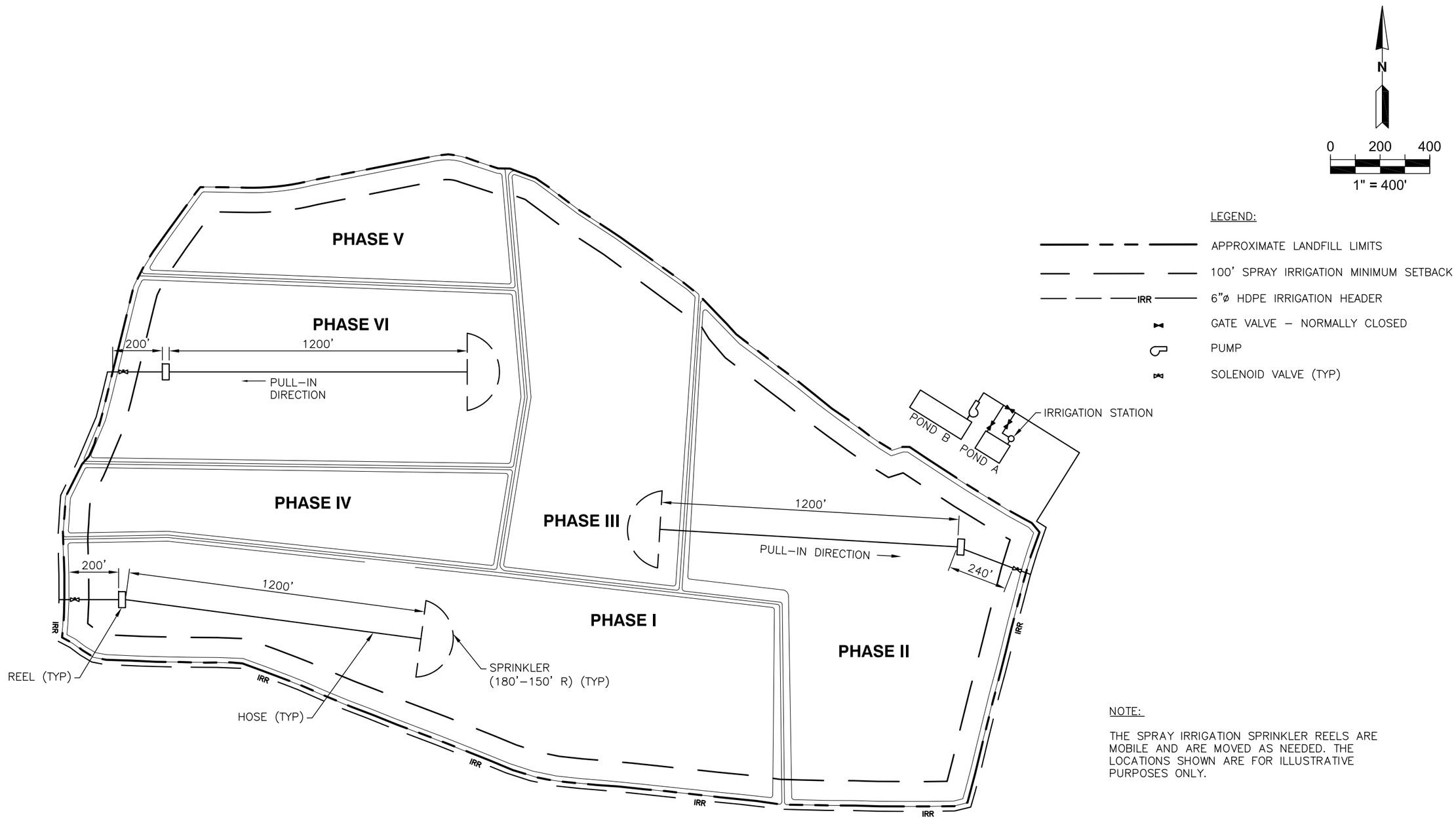
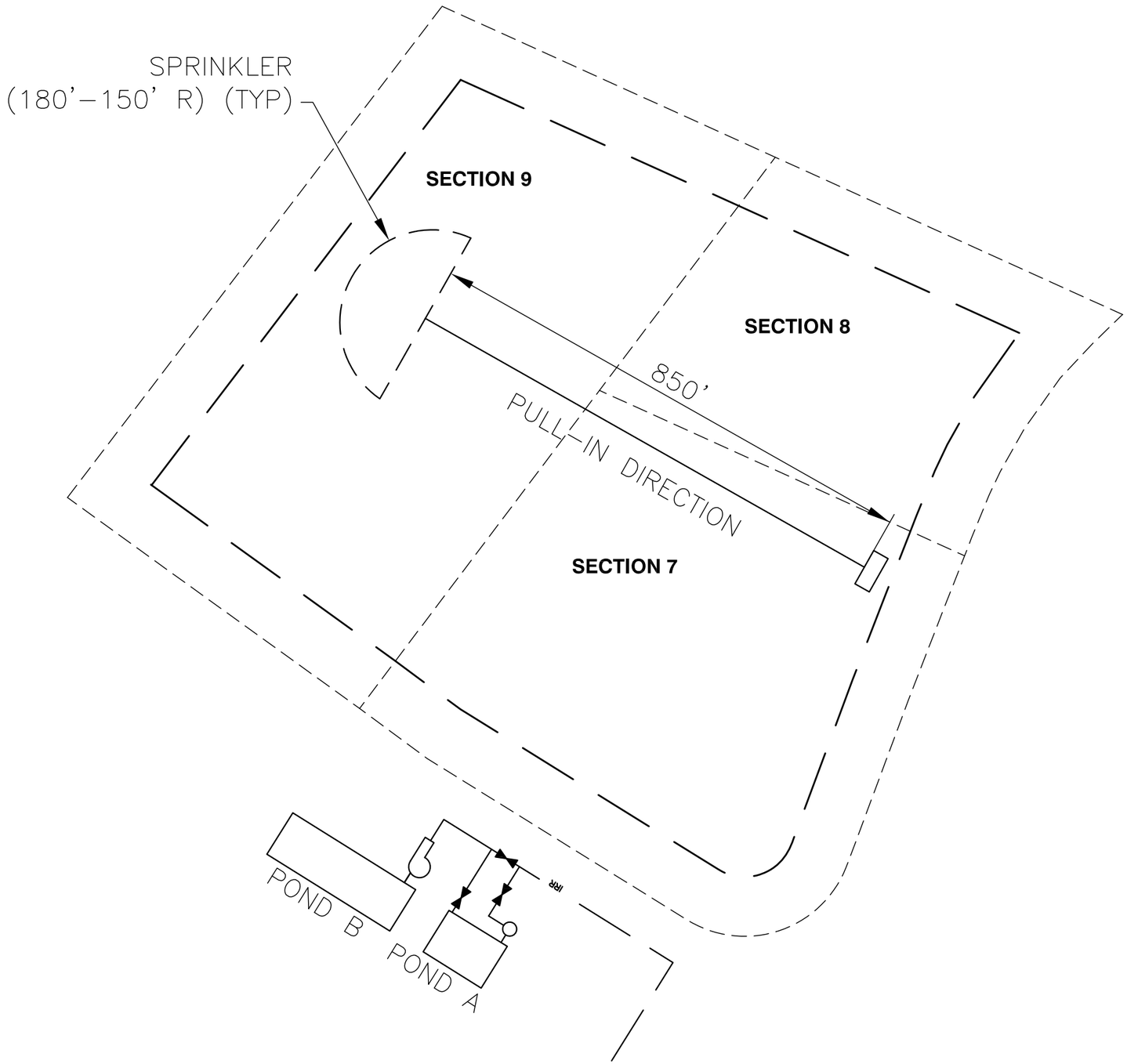
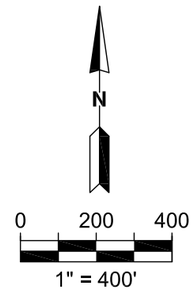


FIGURE 8–1. LOCATION OF PHASE I–VI IRRIGATION SPRINKLER REELS
HILLSBOROUGH COUNTY
APRIL 2021





LEGEND:

- SECTION 7, 8, AND 9 BOUNDARY
- 100' SPRAY IRRIGATION MINIMUM SETBACK
- IRR 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 LOCATION SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY.

SCS ENGINEERS

FIGURE 8–2. LOCATION OF CEA IRRIGATION SPRINKLER REEL
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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 perimeter 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 EVAPORATOR FACILITY VOLUME REDUCTION

The LEF is located to the north of the candlestick flare as shown in **Figure 3-1**. A mixture of leachate and effluent is pumped from Pond B to the LEF for volume reduction via HDPE forcemain. Upon arrival at the LEF an antifoaming agent and a clean in place (CIP) acid solution is mixed into the leachate through process lines. The antifoam chemical reduces foam produced as part of the concentration process. The CIP acid solution helps reduce the accumulation of solids that can form in process piping, instruments, and components. The leachate is subjected to heat generated by the combustion of landfill gas, evaporating water vapor and reducing the leachate volume. The liquid residuals remaining following processing are disposed of using the currently approved leachate disposal methods contained within this LMP Section 8.5 and in accordance with 62-701.500 FAC.

The LEF Process Area is located within a contained concrete pad that drains to a sump. Liquids collected in the LEF Process Area sump are returned to Pond B for storage and reprocessing as shown on **Figure 4-1**. Facility operations and process manuals are maintained on site. Secondary containment and spill countermeasures for liquids at the LEF are described in Section 11.3.

~~8.4~~8.5 LEACHATE AND EFFLUENT EVAPORATION VIA TRUCK-MOUNTED SPRAYING

Evaporation is employed as a supplemental method of disposing of leachate and processed LEF residuals. The supplemental evaporation of leachate and processed LEF residuals 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 and LEF residuals 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 and LEF residuals disposal method does not generate runoff. Leachate and LEF residuals 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~~8.6 EFFLUENT AND LEACHATE TRUCK LOADING FACILITIES

~~8.5.1~~8.6.1 Truck Loading Procedures

Truck loading facilities are located at the LTRF, Effluent Pond A, and the effluent/leachate storage tank (T6).

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 Ponds A/B to a transfer tanker for disposal. Tanker trucks remove the liquid from the LTRF, effluent/leachate storage tank (T6), or Ponds A/B and transport the liquid to a permitted WWTF.

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 WWTFs 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~~8.6.2 Wastewater Treatment Facilities

Leachate can be disposed of offsite at a permitted WWTF. Agreements exist with the Hillsborough County Public Utilities Department (PUD) allowing the discharge of leachate or effluent to three (3) of Hillsborough County's WWTFs (Valrico, Falkenburg, and South County WWTF). Hillsborough County and private contract fleets are used to haul the leachate to a lift station designated by PUD, which discharges to one of the approved WWTFs.

Alternatively, leachate may be hauled to one of the permitted wastewater treatment and disposal facilities listed in **Table 8.~~6~~5.2** by County-owned trucks and private contract fleets. Leachate will be measured by a flow meter as the tanker trucks are loaded at the LTRF truck loading stations.

Table 8.~~6~~5.2 Private Leachate Treatment and Disposal Facilities

Facility Name	Address
Aqua Clean	3210 Whitten Rd., Lakeland, FL 33811
Universal Environmental Solutions	1650 Hemlock St., Tampa, FL 33605
Liquid Environmental Solutions (LES)	1640 Talleyrand Rd., Jacksonville, FL 32206
City of North Port	5355 Pan American Blvd., North Port, FL 34287
Frankens Energy LLC	925 74th Ave. SW, Vero Beach, FL 32968
Covanta Energy Corporation	3830 Rogers Industrial Park Rd., Okahumpka, FL 34762

9.0 LEACHATE FLOW MEASUREMENT, DATA COLLECTION, AND REPORTING

9.1 GENERAL LEACHATE FLOW MEASUREMENT

Once collected, the leachate is pumped to the leachate storage tank (T1). From the storage tank (T1), the leachate can be conveyed to the on-site LTRF for treatment or hauled off-site to a permitted wastewater treatment facility. Leachate quantities from each landfill area are measured via flow meters at each pump station that can provide readout of gallons of liquid removed.

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

9.1.1 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
NO_3-N	monthly	mg/L
TDS	monthly	mg/L

9.1.2 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 Flow Measurement

For Phases I-VI, the leachate quantity is recorded by flow meters at PS-A. 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**.

9.2.2 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 maintained at the Administration Building. 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.

9.2.3 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-2850/4767) 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.

9.2.4 LCRS Monitoring Locations

In accordance with Alternate Procedure No. SWAP 19-1, the SWMG will collect daily liquid level measurements from the PS-B sump, from within the MP 2-2 riser, and from within the CO 2-1 header access cleanout, near the PS-2 intake. The liquid level in PS-B (PS-B reading) will be operated at or below 30 inches, the PS-B maintenance level. The liquid level in MP 2-2 will be maintained at or below 30 inches, the MP 2-2 maintenance level. The liquid level near the PS-2 intake, located within the primary LCRS, header pipe will be maintained at or below 30 inches, the CO 2-1 maintenance level. Should the liquid level within PS-B or the MP 2-2 monitoring point fall out of the maintenance

level range for four (4) consecutive days, the SWMG will enact LCRS inspections and liquids management actions, with the exception of an extraordinary rainfall event.

An extraordinary rainfall event is defined as precipitation resulting from a named tropical storm or hurricane, recognized by the National Oceanic and Atmospheric Administration that effects Hillsborough County, Florida. In the event of an extraordinary rainfall event, a 30-day exception would be allowed to achieve maintenance levels. The monitoring locations, maintenance levels, and liquids management actions that the SWMG will conduct are outlined in **Table 9.2.4**.

Table 9.2.4 Liquid Levels Maintenance Schedule

Monitoring Location	Performance Criteria	Liquids Management Actions
PS-B	At or Below 30 inches as measured from the PS-B reading	1. If the maintenance level rises above 30 inches for four (4) consecutive days, SWMG will inspect the pressure level sensor and verify proper operation. If the pressure level sensor is operating correctly and the PS-B maintenance level is not being met, proceed to the next appropriate corrective action. 2. If the maintenance level is above 30 inches for four (4) consecutive days a temporary pump will be installed into either CO 3-1, CO 1-1, or CO 2-4 header until the PS-B reading returns to the maintenance level.
MP 2-2	At or Below 30 inches as measured from the MP 2-2 pressure level sensor	1. If the maintenance level rises above 30 inches for four (4) consecutive days, SWMG will remove and inspect the PS-2 intake pipe. If the proper function of the intake pipe is verified, and the MP 2-2 maintenance level is not being met, proceed to the next step. 2. If the maintenance level rises above 30 inches for four (4) consecutive days, the SWMG will notify FDEP and install a temporary pump to remove liquid directly from the cutoff trench until the maintenance level can be maintained in MP 2-2 without the assistance of a temporary pump.
CO 2-1	At or Below 30 inches as measured from the CO 2-1 pressure level sensor	1. If the maintenance level rises above 30 inches for four (4) consecutive days, SWMG will inspect the pressure level sensor and verify proper operation. If the measurement device is operating correctly and the CO 2-1 maintenance level is not being met, proceed to the next step. 2. If the maintenance level rises above 30 inches for four (4) consecutive days, SWMG will remove and inspect the PS-2 intake pipe. If the proper function of the intake pipe is verified, and the CO 2-1 maintenance level is not being met, proceed to the next step. 3. If the maintenance level rises above 30 inches for four (4) consecutive days, the SWMG will notify FDEP and install a temporary pump to remove liquid directly from the cutoff trench (CO 1-4, CO 2-2, or CO 2-3) until maintenance levels can be maintained in CO 2-1 without the assistance of a temporary pump.

9.3 CAPACITY EXPANSION AREA MONITORING

9.3.1 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 side 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.

9.3.2 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 effluent and biosolids is described in Sections 9.1.1 and 9.1.2.

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 10.2~~1~~**.

10.2 STORAGE TANK MAINTENANCE AND INSPECTION

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

Table 10.2~~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	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

Component	Frequency	Performance Criteria	Corrective Action
		suspected, remove the suction line for inspection.	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 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.
Pump Station 2 (PS-2) Pump	Pump: semi-annual.	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 4.1.3 and Table 9.2.4 for PS-2 sensor settings). 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. A temporary pump will be installed in the cutoff trench 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.
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.

Component	Frequency	Performance Criteria	Corrective Action
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. Replacement pump will be installed within 24 hours.
Section 9 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.
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 Operations Manager (currently Mr. Larry E. Ruiz). The Landfill Operations Manager reports to the Solid Waste Management Group Director (currently Ms. Kimberly A. Byer). 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 LTRF 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 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 WWTF or a permitted wastewater treatment and disposal facility listed in Table 8.6.2.

3. If the spill condition is at the LTRF process tank (T2) (220,000 gallons) or the secondary stage clarifier tank (T3) (33,000 gallons):
    a. Shut down the LTRF.
    b. The MLPS and PS-9 continue to operate.
    c. With a sump pump, transfer the spilled liquid directly into tanker trucks for disposal at an off-site Hillsborough County WWTF, a permitted wastewater treatment and disposal facility listed in **Table 8.6.2**, or into the leachate storage tank (T1).
4. If the spill condition is at the effluent storage tank (T5) (4,000 gallons):
    a. Shut down the LTRF.
    b. The MLPS and PS-9continue to operate.
    c. With a sump pump, transfer the spilled liquid directly into tanker trucks for disposal at an off-site Hillsborough County WWTF, a permitted wastewater treatment and disposal facility listed in **Table 8.6.2**, or into the leachate storage tank (T1).
5. If the spill condition is at the effluent/leachate storage tank (T6) (575,000 gallons):
    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 WWTF, a permitted wastewater treatment and disposal facility listed in **Table 8.6.2**, or into the leachate storage tank (T1).
6. If the spill condition is at the glycerin tank (T4) (3,200 gallon 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.~~ The MLPS and PS-9 continue to operate.
    c. ~~Shut down the MLPS and PS-9.~~Using the sump pump, transfer the spilled glycerin into the leachate storage tank (T1).
    d. Contact the current hazardous waste contractor. The contractor will manage the removal, off-site disposal, and containment area cleanup for glycerin.
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 WWTF or a permitted wastewater treatment and disposal facility listed in **Table 8.6.2**.
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 (236,000 gallons). Leachate hauling off site can resume from the effluent/leachate storage tank (T6) or Pond 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.

11.3 LEF STORAGE TANK SECONDARY CONTAINMENT SPILL COUNTERMEASURES

As discussed in previous sections, tankage associated with the LEF is contained within a concrete containment pad. The containment pad is composed of two isolated areas, the Process Area and the CIP Chemical Storage Area. All liquids within the containment pad drain to the Process Area sump. A pump conveys liquid from the Process Area sump back to Pond B. The Pond B liquid is managed as leachate and is used as the LEF feedstock.

The Process Area contains two 6,500 gallon Residuals Management Tanks, one 7,000 gallon Decant Tank, and up to five 330 gallon Antifoam Chemical Totes. The residuals management tanks use internal skimmers located in the headspace of the containers to convey residuals decant to the Decant Tank. Only one Residuals Management Tank is connected to the LEF discharge and Decant Tank at a time; however, because the skimmer is located within the headspace of the Residuals Management Tanks, they are not considered to be hydraulically connected to each other or the Decant Tank. Two independent failures of each tank would be required to release liquids from the Decant Tank and a Residuals Management Tank. Liquids from the Decant Tank are recirculated into the LEF processing equipment for further processing. The Process Area consists of 15,304 gallons of containment capacity.

The second isolated area is the CIP Chemical Storage Area. The CIP Storage Area consists of one 1,100 gallon CIP Chemical Storage Tank contained within an isolated area with a capacity of 1,302 gallons. The CIP chemical consists of an acid solution that is used to clean and maintain the LEF process equipment. The CIP storage area is coated with chemically-resistant epoxy to facilitate containment of low pH liquids.

If a liquid spills from the LEF tankage system, the following countermeasures will be enacted.

1. Assess the cause of the spill and correct the condition promptly.
2. If the spill condition is at one of the Residuals Management Tanks (6,500 gallons each):
    a. Shut down the LEF and Pond B feedstock pump.
    b. Switch the LEF discharge to the other Residuals Management Tank.
    c. Convey spilled liquid back to Pond B for reprocessing via the Process Area sump pump.
3. If the spill condition is at the LEF Decant Tank (7,000 gallons):
    a. Shut down the LEF and Pond B feedstock pump.
    b. Convey spilled liquid back to Pond B for reprocessing via the Process Area sump pump.
4. If the spill condition is at the Antifoam Chemical Totes (330 gallons each):
    a. Shut down the LEF and Pond B feedstock pump.
    b. Convey spilled liquid back to Pond B for reprocessing via the Process Area sump pump.
5. If the spill condition is at the CIP Chemical Tank (1,100 gallons):
    a. Use the chemically resistant pump located on site to convey the liquid to chemically resistant temporary holding containers (chemical drums and totes).
    b. Neutralize any remaining CIP chemical in place before draining to the Process Area sump for conveyance and blending in Pond B.

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
Pump Station A, gal			
Pump Station B, inches[8]			
Section 9 Pump #1, gal			
Section 9 Pump #2, gal			
Section 9 LDS, gal[1]			
Sections 7-8 Pump, gal			
Sections 7-8 LDS, gal[2]			
Depth in Pond B, feet[3]			
Pond B LDS, gal[4]			
Pond B Spray, gal			
Depth in Pond A, feet[5]			
Spray Irrigation Pump, gal[6]			
Main LTP Leachate Bypass, gal			
Depth in Leachate Tank, feet[7]			
Depth in Effluent Tank, feet[7]			
Pump Station 2, gal			
Cleanout 2-1, inches[8]			
Monitoring Port 2-2, inches[8]			

Notes:

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

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

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

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

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

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

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

(8) If level is greater than 30-inches, contact Supervisor immediately.

Comments:

TABLE 1. LEACHATE WATER BALANCE REPORT FORM
MONTH/YEAR
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	XXV
Day	Rainfall (in.)	Depth in Pond A (ft.)	Depth in Pond B (ft.)	Estimated Depth at PS-B (in)	Depth in CO 2-1 (in)	Depth in MP 2-2 (in.)	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)	Leachate Treated at LEF (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																								
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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 VI is recorded from the pressure liquid level sensor in CO 2-1.
8. Column VII is recorded from the pressure liquid level sensor in MP 2-2.
9. Columns IX, Section 7-8 leak detection pumped into Section 7 leachate sump riser.
10. Column XIV and XV, calculated from depth in 575,000 gal. tanks.
11. Columns VIII-XIII, XVI-XVIII, and XXI-XXIV, quantities from flow meters.
12. Column XXV includes 80% of the daily values from Columns XVIII, XXII - XXII, plus 90%of Column XXI.

TABLE 2. FIELD DATA ENTRY FORM
MONTH/YEAR
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 Pump Sta. A (gal.)	Flow Meter Pump Sta. 2 (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																						
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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. Columns H and J include quantities from leak detection system.
4. Column B, trace is less than 0.01 inches.
5. Columns C, D, E, F, G, H, I, J, K, L, N, and R-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		Section 7-9 acres
Open	5		0
Intermediate	134.4		34.5
Final	23		0
Not Opened	0		0

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

		Leachate Arriving at LTRF				Leachate Leaving LTRF			Effluent Disposal			Inflow / Outflow For LTRF		
Month	Rainfall (in.)	Condensate from LFG CS-1 (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														

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. 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
PIPES	8	Any pipes bent or deformed?						
	9	Any joints or connections leak?						
	10	Are the pipes free of corrosion?						
CONTAINMENT	11	Is containment area in good condition?						
	12	Is there non-stormwater in the secondary containment area?						
	13	If no, was the stormwater released?						

Comments: _____

_____

Comments: _____

_____

Comments: _____

_____

Inspector's Signature: _____

SOLID WASTE MANAGEMENT DIVISION
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.