OPERATION, MAINTENANCE AND MONITORING PLAN

VOLUME 3
Leachate Management System

Countywide Recycling and Disposal Facility
88-Acre Remediation Unit

Prepared for:

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OPERATION, MAINTENANCE, AND MONITORING PLAN

VOLUMES OF THE PLAN

Volume 1 – Overview and General Requirements
Volume 2 – Gas Collection and Control System
Volume 3 – Leachate Management System (this volume)

INCORPORATED BY REFERENCE

Countywide/Republic Services Health and Safety Plan
Flare Operation and Maintenance Manuals
500,000 Gallon Storage Tank Manual
NPDES Permits
NSPS/Title V Permits
Incident Management System Plan
SPCC Plan
Operating Record
Final Report on U.S. EPA AOC Remedial Actions
Manufacturer Literature

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TABLES

FIGURES

NOTE: A full-size plan of each figure is located in the Records Library.

APPENDICES

TABLE 1 – ABBREVIATIONS

Terms used in this document shall have the following meaning:

500k	500,000 gallons
AFF	Above Finish Floor
amsl	Above Mean Sea Level
AST	Aboveground Storage Tank
CO	Cleanout
CQA	Construction Quality Assurance
DTD	Deep Trench Drain
E Tank	Emergency Tank
EGEW	Enhanced Gas Extraction Well
EPA	Environmental Protection Agency
EUST	East Underground Storage Tank
FM	Forcemain
FML	Flexible Membrane Liner
GCCS	Gas Collection and Control System (Landfill Gas Management System)
gpm	Gallons Per Minute
HASP	Health and Safety Plan
HP	Horsepower
LCS	Leachate Collection System
LFG	Landfill Gas
LLC	LFG and Leachate Collector
LTD	Leachate Toe Drain
LTL	Liquid Transfer Line
ma	Milliamps
MSW	Municipal Solid Waste
NALS	North Area Lift Station
NAST	North Aboveground Storage Tank
NWLS	Northwest Lift Station
OM&M	Operation, Maintenance and Monitoring
PPE	Personal Protection Equipment
Republic	Republic Services of Ohio II, LLC
SAST	South Aboveground Storage Tank
SGC	Subcap Gas Collector
SWLS	Southwest Lift Station
TLS	Truck Load Out Sump
UCC	Under Cap Collector
WWTF	Wastewater Treatment Facility

Terms not defined above shall have the meaning expressly defined in the body of this document.

1.0 INTRODUCTION

This volume of the Operation, Maintenance, and Monitoring Plan (OM&M Plan) presents the requirements to operate and maintain the leachate collection system within the 88-acre remediation unit at the Countywide facility. Section 1.2 of Volume 1 describes theories and a model of reactions which are occurring within portions of the area.

The effects of the reaction result in significant environmental management challenges. It is not known how long the reactions will continue or how long these conditions will exist, but it is believed the elevated temperatures and atypical gas quality, leachate volume, and leachate quality will be present for many years. Section 6.0 of Volume 1 includes provisions for monitoring these parameters.

Between 2006 and 2009 the site leachate collection system was significantly modified in response to changing conditions as the reaction developed. Recently, significant improvements have been made; an important component of these improvements is the ability to manage leachate derived from the 88-acre remediation unit with its unique characteristics separate from the typical municipal solid waste (MSW) leachate derived from the 170-acre operational unit. This separation concept is illustrated on **Figure 3-1**. The 88-acre remediation unit leachate collection system infrastructure includes the following.

- 88 acres of granular and/or synthetic blanket leachate collection layer overlying a composite baseliner; a variety of near-surface collection trench drains; and dual phase gas extraction wells equipped with liquid removal pumps.

- Sumps and lift stations which convey leachate away from the various collection devices through a system of forcemains network to leachate storage tank(s).

- Leachate storage tanks, including two 500,000 gallon (500k) tanks located in the primary leachate storage tank compound and two preexisting tanks (30,000 each) (to be used in contingency). In the primary tank compound, the two tanks share a secondary containment dike and truck load-out pad. One tank is dedicated primarily to the 170-acre operational unit and the other tank is dedicated primarily to the 88-acre remediation unit.

See **Figure 3-2** for a detailed schematic representation of the overall 88-acre leachate collection system. **Table 1** contains a list of abbreviations used in this OM&M Plan.

References are made in this OM&M Plan to specific guidance documents, manuals, and policies; it is understood that if and when these documents are updated, the current versions shall be adopted. This OM&M Plan is intended to be a “living” document. As described in the specific sections of this OM&M Plan, most operation and maintenance activities are self-implementing with infrequent need for authorizations or changes. Forms used to operate and maintain the facility may be revised by Countywide, as long as the basic information required by this OM&M Plan is recorded. Any modifications to the OM&M Plan would be made in accordance with the procedures described in Section 13.0 of Volume 1.

2.0 OPERATION

Procedures in this Plan are specific to the 88-acre remediation unit. A partial list of the components described and covered by this Plan are as follows.

- Cell Floor Sumps
- Dual Phase Gas Extraction Wells
- Subcap Drains
- Leachate Toe Drains
- Deep Trench Drain
- Lift Stations
- Storage Tanks

These leachate system components are schematically illustrated on **Figure 3-2**. Regular inspections will be performed to verify system operation and compliance. Recommended frequency and procedures are presented in **Table 2**, with associated corrective actions presented in **Table 3**.

2.1 Cell Floor Sumps

The landfill cell floor and liner system are sloped to terminate at a series of low points called sumps. Cell floor grades, leachate collection pipes, and sumps are shown on **Figure 3-3**. Sideslope risers are large diameter pipes which provide access to the sump for installing the cell sump pumps. **Figures 3-4** and **3-5** show details for the sumps and side slope riser installations in the 88-acre remediation unit.

Each cell contains a system of perforated pipes which collect leachate from the granular leachate collection layer and transmit it via gravity to the cell sump, with the exception of cell 6 which transmits to the 5A/B sump. Each collection line has a cleanout riser, which are identified on **Figure 3-3.**

Seven floor sumps collect leachate from the bottom of cells 1, 2N, 2S, 3, 4, 5 A/B, and 5 C/D. Except for cell 1, which flows via gravity, all of the sumps contain a Grundfos (or equivalent) submersible electric leachate pump. The leachate is pumped from the various sumps to a lift station or directly to storage. Operation procedures for the cell floor sumps are contained in **Appendix A.**

See Volume 1, Section 6.3.6 for procedures to monitor temperatures within the cell floor leachate collection system. If leachate temperatures elevate within a sump, the pump may overheat and require frequent replacement. In this case, an evaluation of alternative pumps should be performed and/or additional replacement pumps should be kept in the spare inventory.

2.2 Dual Phase Gas Extraction Wells

Efficiency for some gas extraction wells is enhanced by adding dedicated down-hole leachate pumps. Liquid pumped from these dual phase gas/leachate extraction wells is directed to the leachate collection system via a network of liquid transmission lines, which are connected to the perimeter leachate collection system as shown on **Figure 3-6**. Details regarding this system are provided in Volume 2 of this OM&M Plan. The number of gas extraction wells equipped with leachate extraction pumps varies according to the presence or absence of water in the gas extraction wells; Volume 2 describes the process for identifying wells that require pumping and equipping them with pumps.

2.3 Leachate Collection Drains

2.3.1 Subcap Drains

Subcap drains enhance cap stability by removing liquids which might otherwise collect beneath the flexible membrane liner (FML) cap which may reduce the coefficient of friction between the FML and the intermediate cover soil. Subcap drains collect liquids that might be expressed from surface seeps beneath the FML cap and from condensation which may occur below the temporary FML cap. The drains also help ensure the subcap landfill gas (LFG) collector conveyance pipes will not “water in.”

These subcap drains are comprised of two systems: The LFG & Leachate Collection (LLC) Drain and Under Cap Collection (UCC) Drains. The term subcap drains is used in Volume 3 as a collective reference for the combined drainage systems which work in parallel to achieve the intended purpose described above. The LLC is a dual phase collection system consisting of two perforated pipes installed in a common trench as substantially depicted on **Figure 3-7,** and in detail on **Figure 3-8**. Subcap drains are installed to provide a constant fall from the high end to the low end so that they convey collected liquids to a common header pipe called a Liquid Transfer Line (LTL). The LTLs solid wall pipes connect the subcap drains to the leachate collection system outside of the limits of waste. Outside of the limits of waste, the LTLs are dual-contained.

Subcap collection drains are connected to the leachate collection and conveyance system via gravity drain pipes. **Figure 3-9** shows the features listed below.

- Subcap collection system conveyance pipes

- Control valves
- Cleanouts
- Connections with the leachate collection and conveyance system

Procedures for operating and inspecting the subcap drains are contained in **Appendix B**.

2.3.2 Leachate Toe Drains (TD)

The leachate toe drains (TD) collect excess leachate which is driven toward the toe of the slope by gravity and the pressure gradient generated by the dross reaction. The TD also collects the undercap condensed leachate and conveys it to the leachate collection system. The TD's function is to prevent leachate build-up beneath the cap at the toe of the side slopes which could result in slope instability, and to prevent potential leachate release into the perimeter storm water ditch.

The plan view extent of the TDs is shown on **Figure 3-10**. **Figure 3-8** shows the typical cross sectional design on the TDs. Procedures for operating and inspecting the leachate toe drains are contained in **Appendix B**.

2.3.3 Deep Trench Drain (DTD)

The DTD collects gas and liquids which are expressed from the waste as the reaction moves in a northern direction and get trapped beneath the cap at the grade transition along the alignment of the former main access road of the 88-acre remediation area cap.

The DTD is a purpose-specific dual-phase gas and leachate drain installed to capture and manage leachate which has historically collected in gas extraction wells installed along the inside ditch of the 88-acre cap access road. The location and extent of the DTD is shown on **Figure 3-10**. The DTD's design is similar to the subcap gas collection installations.

Refer to detail 13 on **Figure 3-8** for DTD installation details. Inspection and operation of the DTD will be as described in **Appendix B**.

2.4 Lift Stations

The leachate collection system includes three lift stations that transfer leachate to the West 500k AST. The three lift stations are labeled:

1. Northwest Lift Station (NWLS)
2. Southwest Lift Station (SWLS)
3. Northern Area Lift Station (NALS)

The three lift station locations are presented on **Figure 3-2**. Details of the NWLS are shown on **Figure 3-11**. Details of the NALS are shown on **Figures 3-12, 3-13**, and **3-14**. Details of the SWLS are presented on **Figure 3-15** and **3-16**. Electrical diagrams for the three lift stations are provided on **Figure 3-17**. Lift station operating information is presented in **Appendix C**.

The NWLS is on the northwest corner of the 88-acre remediation unit and sits outside the Cell 5 C/D limits of waste. It collects the north (isolation break) and northwest slope subcap drains, leachate toe drain systems and condensate from northwestern portions of the 88-acre remediation unit. The lift station has a Simplex submersible pump or equivalent installation controlled by an Endress-Hauser (or equivalent) liquid level controller and a Geotech (or equivalent) pressure transducer. A list with manufacturers' literature and specifications is provided in **Appendix D**. A dedicated pad-mounted backup generator is located at the NWLS for power failure events. A summary of the NWLS operation is provided in **Appendix C**.

The SWLS is located southwest of the southwest corner of the 88-acre remediation unit. The SWLS receives flow from the NWLS as well as the leachate collection features located in the south and southwestern portions of the remediation unit. The lift station has a duplex submersible pump installation controlled by an Endress-Hauser (or equivalent) liquid level controller and a Geotech (or equivalent) pressure transducer. A list with manufacturers' literature and specifications is provided in **Appendix D**. The SWLS is equipped with an emergency load-out pad and three 20,000-gallon mobile tanks which provide emergency overflow capacity in the event the pumping system fails. A dedicated pad-mounted backup generator is located at the SWLS for power failure events. A summary of the SWLS operation is provided in **Appendix C**.

The NALS is located north of Cell 1 near the northeast corner of the 88-acre remediation unit. The NALS receives liquid from the leachate collection features in the northern and eastern portions of the remediation unit. The lift station has a duplex submersible pump installation controlled by an Endress-Hauser (or equivalent) liquid level controller and a Geotech (or equivalent) pressure transducer. A list with manufacturers' literature and specifications is provided in **Appendix D**. A dedicated pad-mounted backup generator is at the NALS for power failure events. A summary of the NALS operation is provided in **Appendix C**.

2.5 Storage Tanks

Countywide recently added one million gallons of on-site leachate storage capacity at the site. With current leachate generation rates of approximately 100,000 gallons per day, these new tanks provide about 10 days of storage buffer in the event that disposal capacity is temporarily interrupted (e.g. a major storm event that requires one of the POTWs to temporarily cut off industrial customers). In addition, Countywide will reserve two 30,000-gallon pre-existing leachate storage tanks (see Sections 2.5.4 and 2.5.5) for contingency.

2.5.1 500,000 Gallon Aboveground Storage Tanks (ASTs)

Two 500,000 gallon capacity storage tanks are located in a compound which is equipped with a lined and secondary containment area as shown on **Figure 3-18**. These tanks were manufactured by AquaStore® Engineered Storage Products Company in DeKalb, Illinois. They feature glass-coated, bolted steel plate shell construction with cathodic protection. A list with manufacturers' literature and specifications is provided in **Appendix D**.

These tanks are referred to as the East 500k AST and the West 500k AST. Leachate originating from the 170- acre operation unit is pumped to the East 500k AST and leachate originating from the 88-acre remediation unit is pumped to the West 500k AST. As a routine matter, the leachate will be stored, off-loaded, and shipped for treatment separately from the two units as described above. However, these tanks are interconnected so that storage can be combined to optimize treatment for the off-site treatment plants, for equalization of capacity should one tank get near full, or for cleaning one of the tanks. Details of the tanks are provided on **Figures 3-19** and **3-20**.

The tanks are fitted with a Ramco Aeration System to prevent settling and freezing in the winter months. A list with manufacturers' literature and specifications is provided in **Appendix D**. In addition, these tanks have been designed with a system for injecting a defoaming agent to control the formation of excess foam in the tank during tanker truck transfer operations where the liquid may be agitated to a point when foam forms (see Section 2.5.6).

Both tanks have redundant overfill protection process controls. The tank liquid level controls are linked to the cell floor leachate pump controls via a radio communication link and automatically deactivate the pumps sending leachate to the tanks when a tank full or high alarm is activated. A list with manufacturers' literature and specifications is provided in **Appendix D**.

Operation procedures for the 500 K leachate storage tanks are contained in **Appendix E**. A list with manufacturers' literature and specifications is provided in **Appendix D**, and procedures for the application of the defoamer material are contained in **Appendix F**.

2.5.2 Radio Interlock

The East 500k AST and West 500k AST are equipped with overflow protection. Each tank has a redundant alarm system consisting of an Endress-Hauser (or equivalent) (**Appendix D**) liquid level controller with two set points, two floats and two limit switches which are attached to the sliding level indicator that is used to signal the radio control that the liquid level in the tank has risen to the High Level Alarm or the High-High Level Alarm. When this occurs, a signal is sent by the radio to the pump systems transferring liquid to the tank to lock out further operation of those pumps until the liquid level in the tank is reduced to a point below the full set point.

If the radio interlock does not have power, check and replace the fuses with spares maintained in the cabinet. A list with manufacturers' literature and specifications is provided in **Appendix D**. A summary of the radio interlock function capabilities is provided in **Appendix E.**

2.5.3 Aeration

Both the East 500k AST and West 500k AST are equipped with two 25 horse power (hp) air compressors to deliver high volume air at a low pressure through a series of injection nozzles installed inside of the tanks. Air is used to help keep the solids from settling out and to keep the leachate from freezing in the winter. A visual check from the top of the tank witness manhole can confirm how well the air is being distributed in the tank. Spare blower belts, oil and grease should be kept in the pump house for quick service. A list with manufacturers' literature is provided in **Appendix D**.

2.5.4 South Aboveground Storage Tank (SAST)

The SAST is a 30,000-gallon AST that will be used as an alternate storage location for cells 5 A/B, 5 C/D, 7 8 A, 8 B and the SWLS. The SAST has a concrete load-out pad northeast of the tank from which trucks can remove the leachate. See **Appendix E** for level controller set points.

2.5.5 North Aboveground Storage Tank (NAST)

The NAST is a 30,000-gallon AST that will be used as an alternate storage location for the NALS. The NAST has a concrete load-out pad southeast of the tank from which trucks can remove the leachate. See **Appendix E** for level controller set points.

2.5.6 Defoamer

Countywide Landfill has at times experienced problems with leachate foaming at lift stations, storage tanks and during tanker truck filling operations. The occurrence of foam reduces capacity in the storage tanks, and can interfere with proper operation of float and liquid level controls. In extreme cases, foaming could possibly result in tanks releasing to secondary containment.

To address this foaming issue, Countywide Landfill has installed leachate de-foaming systems located at the 500k AST Pump House to service the East 500k AST, West 500k AST, SWLS and NALS. Procedures for using defoamer are presented in **Appendix F**.

2.5.7 Truck Load-Out Operation at the 500,000 Gallon ASTs

The truck load-out pad at the dual 500k ASTs will serve as the primary point for loading the tanker trucks used for leachate transfer to the various off-site treatment plants.

Except in an emergency, leachate transfer hours of operation are from 4:00am until 6:00pm. Detailed procedures for leachate storage tank load-out are contained in **Appendix G**.

2.5.8 Truck Bay Load-Out Pads and Sump

Loadout pads with sumps are provided to capture and return leachate released during transfer operations along with contact water back to the leachate storage tank to prevent release to the environment. Detailed procedures for operating the load-out bay pumping system are provided in **Appendix H**.

3.0 MAINTENANCE

The Leachate Collection System (LCS) has been designed and constructed to meet current state of the art operation, durability, and environmental security. However, it is a complex mechanical and electrical system having many components subject to severe environmental and chemical stresses in normal operating mode. These stresses include:

- Harsh weather conditions
- Continuous operation
- High liquid and reaction-induced ambient temperatures
- Corrosive liquids
- Aggressive compounds detrimental to most seals and gaskets
- Potentially explosive vapors
- High dissolved organic solids and biological anaerobes
- High dissolved mineral content

Even the most robust systems operating in these conditions require consistent maintenance to ensure satisfactory operation and performance. The nature of some of the conditions noted is unique to the 88-acre remediation unit, and as such, Countywide has evolved maintenance regimens not normally required at a typical MSW landfill. The following sections summarize the maintenance requirements for the 88-acre remediation unit LCS which have been developed and proven through applied trial and error.

3.1 Cell Floor Sumps

Procedures for removing the cell floor pumps for maintenance are located in **Appendix I**.

3.2 Leachate Collection Drain Pipes

Maintenance procedures for the cell floor leachate collection pipes, subcap drains, toe drains, and the deep trench drain are provided in **Appendix J**.

3.3 Leachate Transmission Lines

Maintenance procedures for solid single-wall and double-walled leachate transmission pipes are provided in **Appendix K**.

3.4 Lift Stations

Perform the maintenance tasks identified in **Appendix L** at the specified frequencies.

3.5 Storage Tanks

Procedures for cleaning and maintaining the leachate storage tanks are included in **Appendix M**.

Table 2 – Inspections for the Leachate Management System

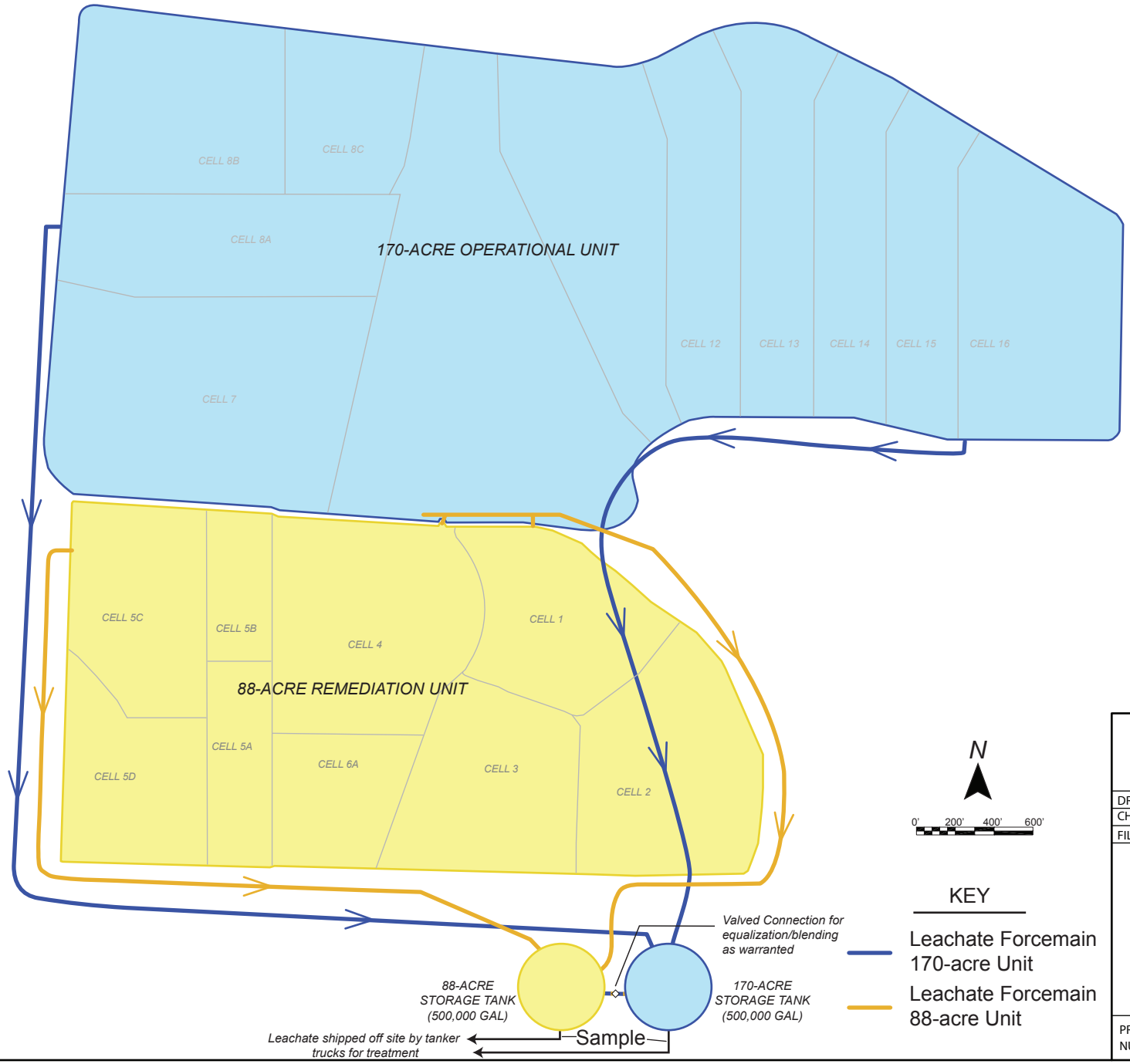
Item or Conditions to Be Inspected	Approximate Inspection Frequency	Inspection Procedure	Criteria for Acceptance
Leachate System Sumps		Perform inspection as outlined in Checklist A1.	No malfunctions observed.
Storage Tank Interlock Controls		Perform interlock test procedures as noted in Checklist A2.	No malfunctions observed.
Leachate Collection Pipe	Varies	Jet-rod pipelines to remove foreign material & inspect pipe for blockage or damage. Refer to Appendix J for frequency.	No blockage or damage observed.
Leachate Collection Pipes – LLC, UCC, TD & DTD	Weekly	Observe and document any ponding water, bulging at toe of slope, leachate breakouts, etc. over length of piping systems. Refer to Appendix B for more detailed instruction.	No visual impact observed.
Leachate Collection Pipes - Penetrations	Weekly	Inspect LLC, UCC, TD and DTD penetration boots for integrity. Refer to Appendix B for more detailed instruction.	No stress, leaks or damage observed.
Lift Station Valves	Monthly	Inspect and exercise valves by opening and closing the valve twice thru entire valve cycle. Refer to Appendix L for more detailed instruction.	No stress or damage observed.
Lift Station Floats	Monthly	Remove and clean floats. Verify operation and reinstall. Refer to Appendix L for more detailed instruction.	No stress or damage observed.
Pump Intake Screens	Quarterly	Remove pumps & clean intake screens. Refer to Appendix L for more detailed instruction.	No stress or damage observed.
Lift Station Check Valves	Semiannually	Isolate, remove & clean check valves. Reinstall & verify operation. Replace if necessary. Refer to Appendix L for more detailed instruction.	No stress or damage observed.
Lift Station Generators	Monthly	Follow maintenance per manufacturer's guidelines. Refer to Appendix L for more detailed instruction.	
Lift Station Pumps	As needed	Replace when failure has been confirmed. Refer to Appendix L for more detailed instruction.	
Lift Station Secondary Containment Vessels	Monthly	Check secondary containment vessels for liquid. Open witness port & check with dip stick. Refer to Appendix L for more detailed instruction.	No liquids present.
Lift Station Grit Chambers	Monthly	Measure sediment accumulation in chamber & wet well with dip stick. Refer to Appendix L for more detailed instruction.	Sediment below 6 inches in wet well; 12 inches in grit chamber.
Valve Building	Daily	Check for leaking valves. Confirm adequate building temperature. Refer to Appendix L for more detailed instruction.	No presence of liquid. Temperature is adequate to prevent freezing.
SWLS Overflow Tanks	Daily	Inspect tanks for leachate and verify float operation. Inspect heat trace on piping during winter months. Refer to Appendix L for more detailed instruction.	No presence of liquid in tanks.
Leachate Storage Tanks	Weekly	Perform inspection as outlined in Checklist M1.	No malfunctions observed.
Storage Tank Valves	Monthly	Perform inspection and exercising per Checklist M3.	No malfunctions

Table 3 – List of Corrective Procedures for the Leachate Management System

Description of Compromise	Procedures to be Followed to Correct the Compromise	Target Time for Correction*
Leachate System Sumps	Determine if compromise is a control problem i.e.: blown fuse, bad liquid level controller or transducer (repair or replace as needed) or a pump problem (follow procedures in Appendix I)	1-2 days
Storage Tank Interlock Controls	Troubleshoot system electrical controls to determine whether a fuse, control switch or radio signal is at fault (replace as needed) Qualified personnel only!	ASAP
Leachate Collection Pipe	Videotape blockage determine location, if possible, and meet with OM&M Manager to design possible repairs	3 Months
Leachate Collection Pipes – LLC, UCC, TD & DTD	Leachate outbreaks are to be contained immediately. OM&M manager notified immediately to design needed repairs. Ponding or bulging jet rod local leachate collection pipes to see if block and/or if this will correct problem notify OM&M manager when noted	Outbreaks (ASAP) 1 month
Leachate Collection Pipes - Penetrations	Repair penetration with electro-fusion weld to boot as needed. Qualified personnel only	1 Week
Lift Station Valves	Isolate valve, LOTO all pumps and electrical controls associated with the valve, remove heat trace and insulation (if applicable) unbolt valve and replace	1 Week
Lift Station Floats	Follow Lift Station Maintenance procedures in Appendix L for cleaning Lift Station and remove and replace float. Qualified personnel only!	1 Week
Pump Intake Screens	Follow Lift Station Maintenance procedures in Appendix L for cleaning Lift Station Repair or replace screen if damaged	1 Week
Lift Station Check Valves	Follow Lift Station Maintenance procedures in Appendix L for cleaning Lift Station. Repair or replace check valve if damaged	1 Week
Lift Station Generators	Contact OM&M manager to send generator out for repairs and install a temporary generator in its place. Test for auto start	1 Week
Lift Station Pumps	Follow Lift Station Maintenance procedures in Appendix L for cleaning Lift Station. Replace pump and fill out Checklist I.1 and notify OM&M manager with an inventory update	1 Week
Lift Station Secondary Containment Vessels	Contact OM&M Manager to schedule cleaning. Follow Lift Station Maintenance procedures in Appendix L for cleaning Lift Station	2 Weeks
Lift Station Grit Chambers	Contact OM&M Manager to schedule cleaning. Follow Lift Station Maintenance procedures in Appendix L for cleaning Lift Station Grit Chamber	2 Weeks
Valve Building	Isolate leaking valves and repair or replace. Turn on building heat repair if needed, insulate pipes if needed. If pipe are frozen thaw out slowly and watch out for ruptures.	1 Week
SWLS Overflow Tanks	Contact OM&M Manager if leachate is in overflow tanks and determine cause and make needed corrections	ASAP
Leachate Storage Tanks	Contact OM&M manager of issue and make repairs as needed and in a manner of its severity	2 Weeks
Storage Tank Valves	Isolate valve, LOTO influent liquids and electrical equipment and replace valve	1 Week

***** If an immediate threat to human health, safety, or the environment exists, these target times would not apply; rather immediate and if necessary temporary repairs must be made as soon as possible.

FIGURES



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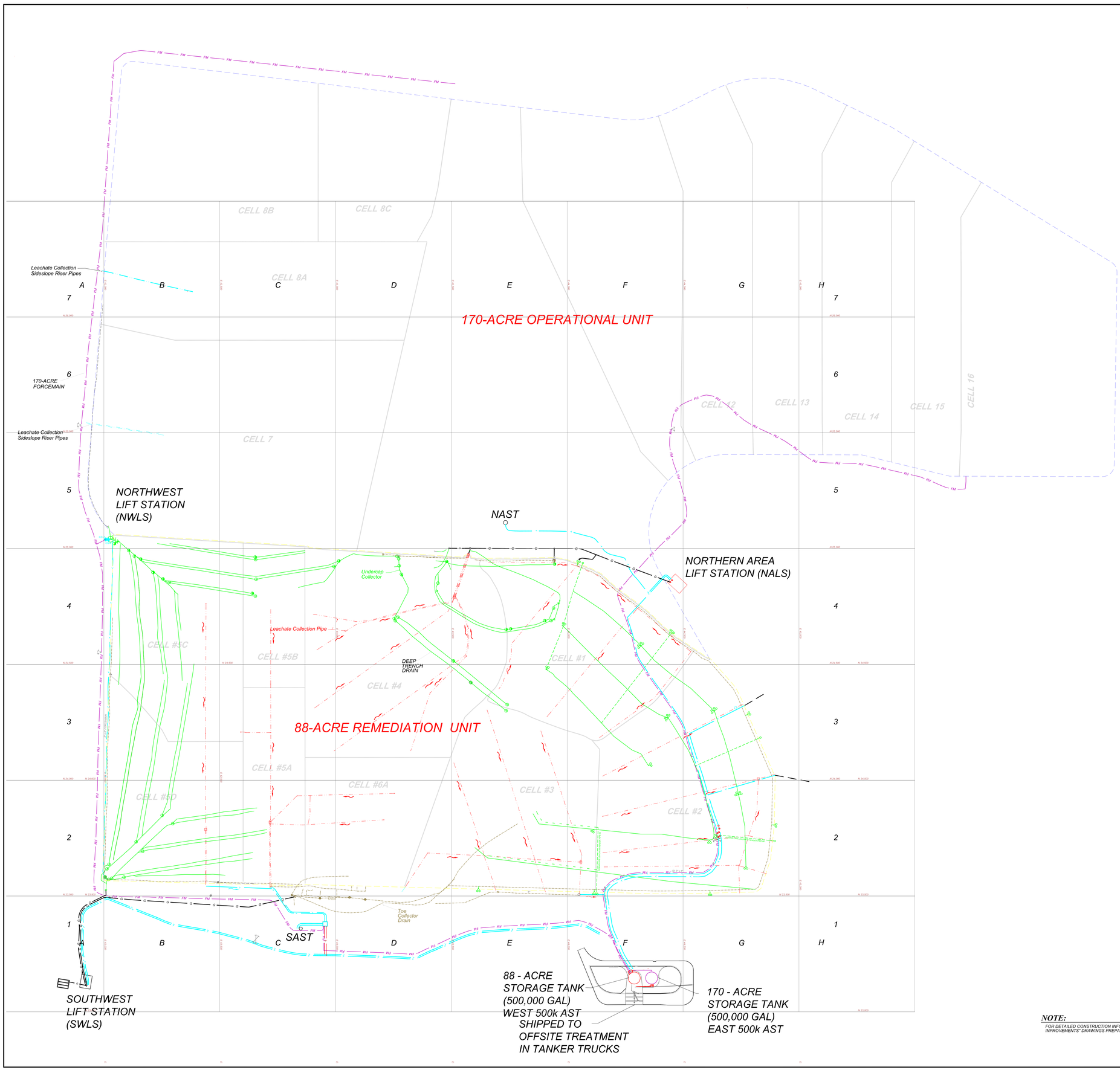
DRAWN BY: Colin Plank	DATE: June 12, 2009
CHECKED BY:	EDITED BY:
FILE NAME: CWFIG5.pdf	

Figure 3-1

Leachate Management Schematic

PROJECT NUMBER	103345	SCALE:	As shown



LEGEND

- 88 ACRE TRANSMISSION SYSTEM-
- FM — 170 ACRE TRANSMISSION SYSTEM
- G — GRAVITY FLOW - DUAL-CONTAINED LEACHATE COLLECTION HEADER
- CLEANOUT
- CELL BOUNDARY
- TOE COLLECTOR SYSTEM
- LEACHATE COLLECTION SYSTEM
- SUBCAP COLLECTION SYSTEM - LFG, LLC, UCC, LTL & DTD
- LIMITS OF 170 ACRE OPERATION UNIT
- LIMITS OF 88 ACRE REMEDIATION UNIT

N

W E

S

Scale: 1 in. = 200ft.

0' 200' 400' 600'

Graphic Scale

NOTE:

FOR DETAILED CONSTRUCTION INFORMATION SEE "LEACHATE SYSTEM INPROVEMENTS" DRAWINGS PREPARED BY DIVERSIFIED ENGINEERING INC.

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LEACHATE COLLECTION SYSTEMS IDENTIFICATION PLAN

Issued

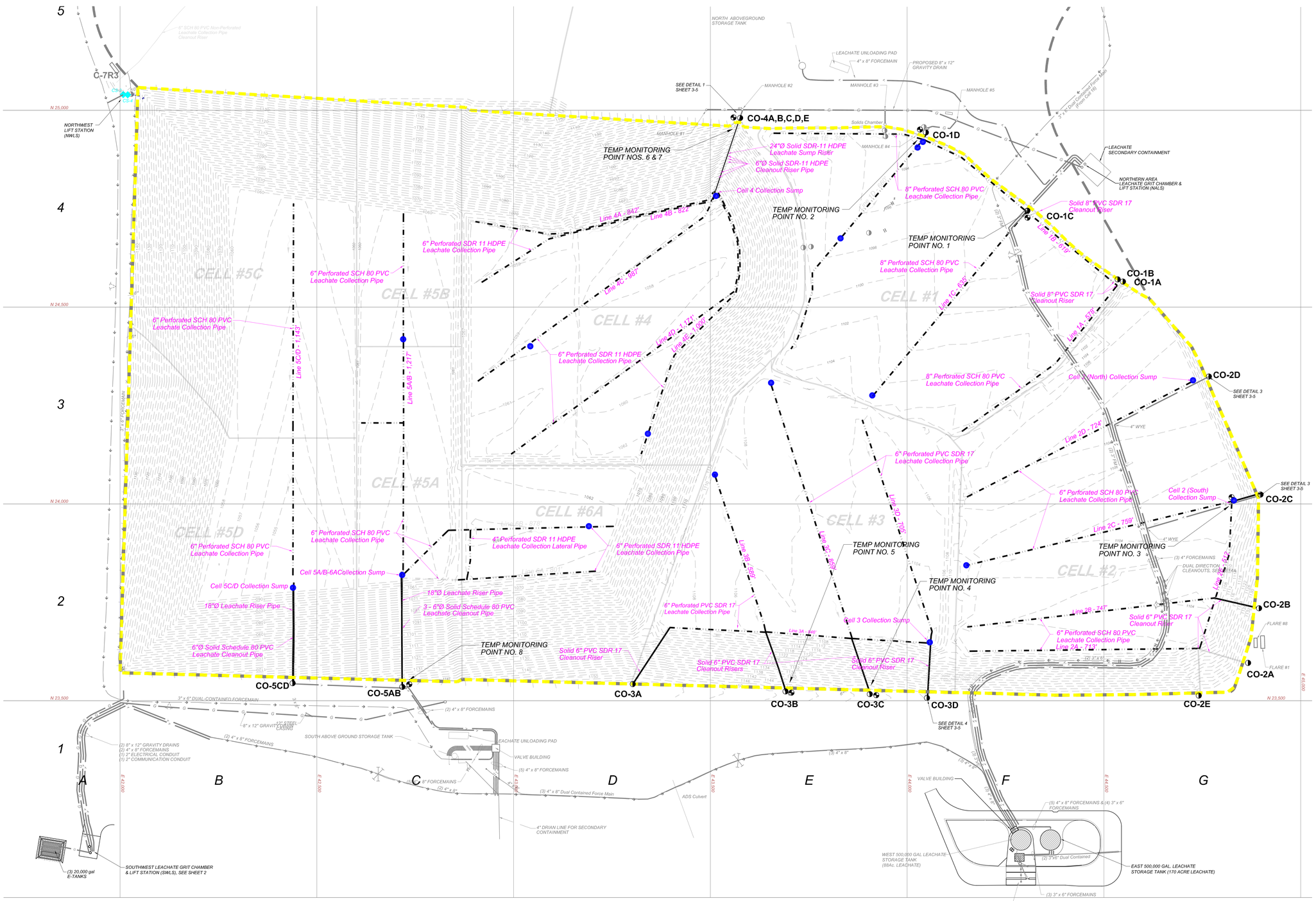
Rev	Date	Description

Designed:
Drawn: DCT 06/04/2009
Checked: AMC 06/04/2009
Approved: DAD

PROJECT NUMBER
103345

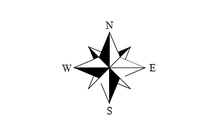
SHEET REFERENCE NUMBER

FIG. 3-2



LEGEND

- PERMANENT PROPOSED BELOW GROUND DUAL CONTIANED LEACHATE FM
- GRAVITY FLOW - DUAL-CONTAINED LEACHATE COLLECTION HEADER
- CLEANOUT
- TEMPERATURE MONITORING POINT
- 88 ACRE REMEDIATION UNIT
- CELL BOUNDARY
- CELL FLOOR CONTOURS
- LEACHATE COLLECTION PIPE & INSTALLED LENGTH (FEET)
- THERMOCOUPLE LOCATION



Scale: 1 in. = 100ft.

0' 100' 200' 300'

Graphic Scale

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CELL FLOOR COLLECTION SYSTEM & TEMPERATURE MONITORING

Issued

Rev	Date	Description

Designed:
Drawn: DCT 06/04/2009
Checked: AMC 06/04/2009
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PROJECT NUMBER
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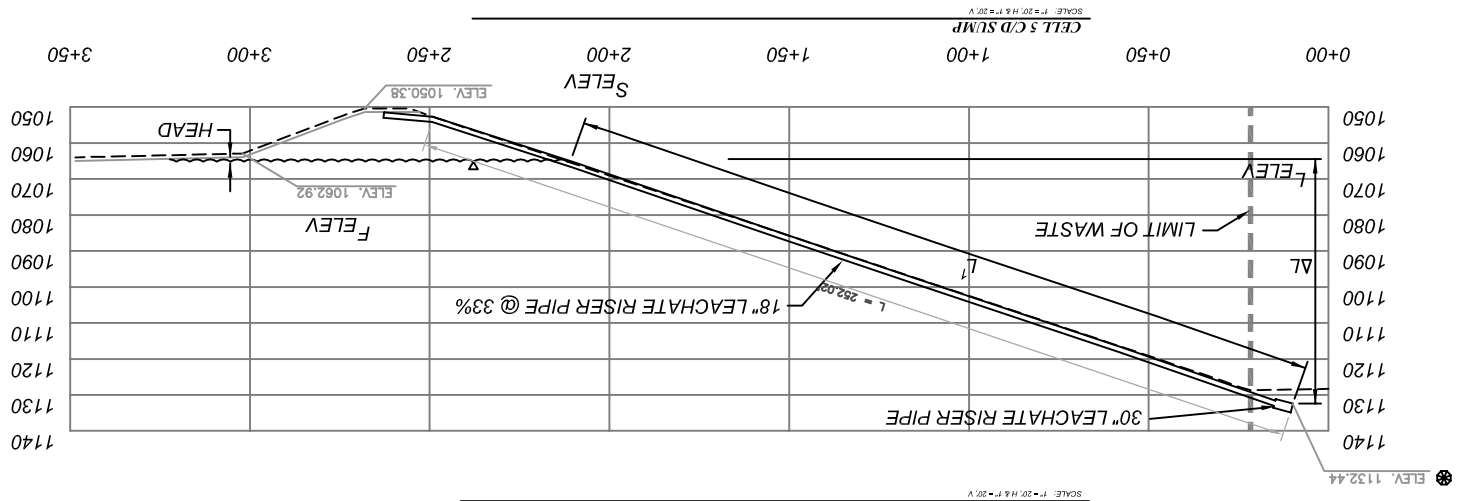
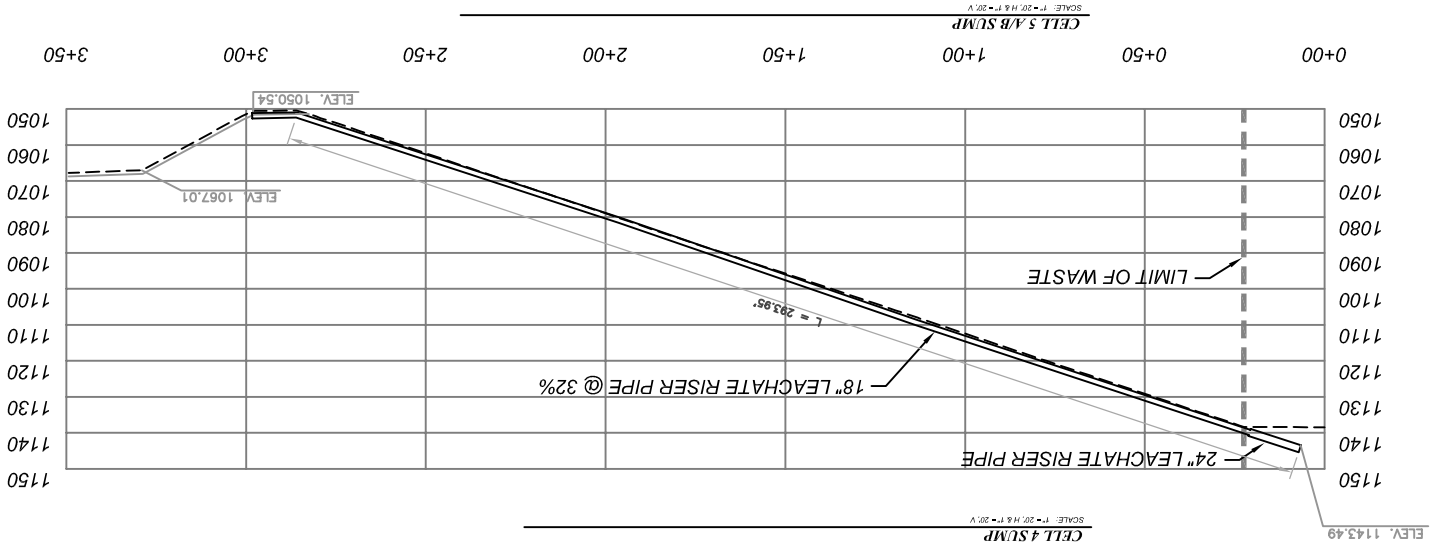
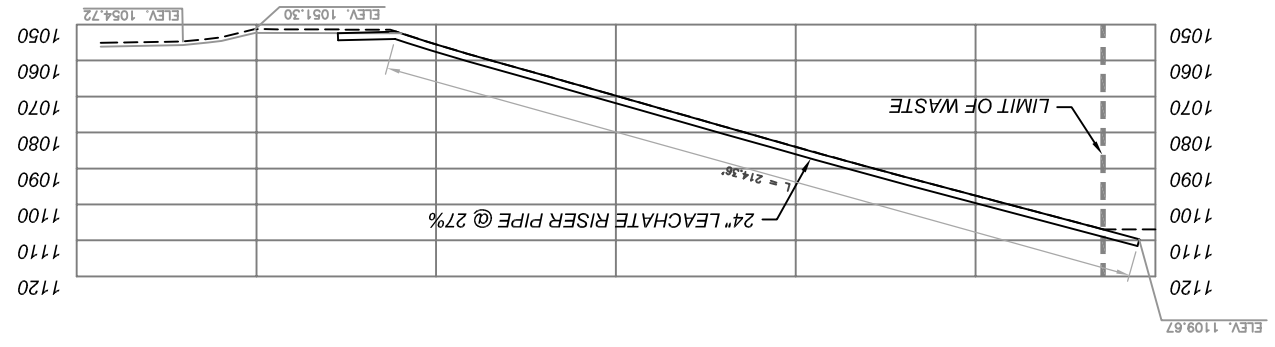
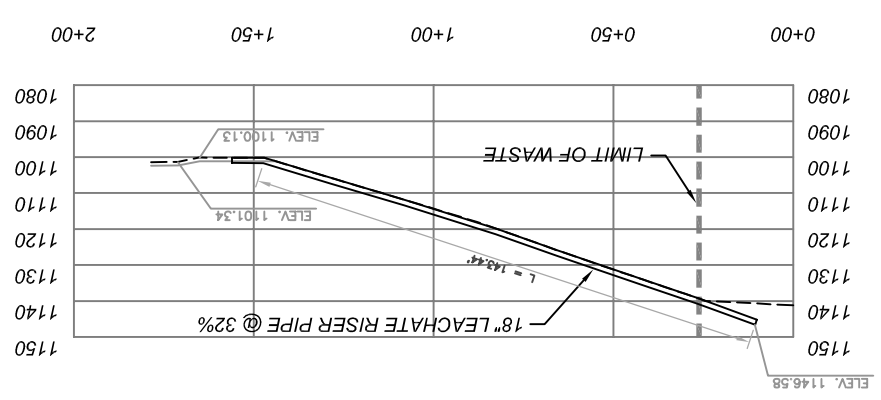
SHEET REFERENCE NUMBER

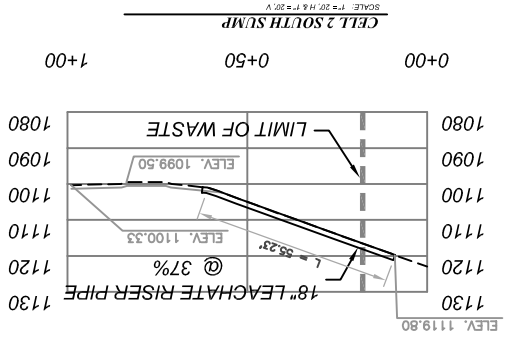
FIG. 3-3

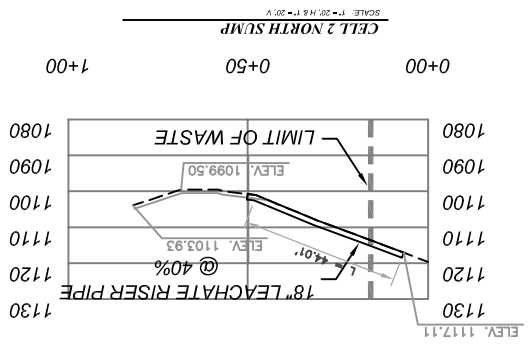












LEGEND

- TOP OF DRAINAGE LAYER
- TOP OF CLAY LINER
- ELEVATION REFERENCE
- STATIC LEACHATE ELEVATION
- 33% PERCENT SLOPE = 33 FEET VERTICAL RISE IN 100 FEET HORIZONTAL RUN

MANUAL SUMP LEACHATE LEVEL VERIFICATION PROCEDURE:

1.) USING WATER LEVEL METER, DETERMINE L_{ELEV} IN FEET.

2.) MULTIPLY L' BY SLOPE TO DETERMINE ELEVATION DIFFERENCE, ΔL BETWEEN THE REFERENCE ELEVATION AND THE STATIC LEACHATE ELEVATION F_{ELEV}

3.) TO FIND F_{ELEV} SUBTRACT ΔL FROM THE REFERENCE ELEVATION ❁

4.) TO DETERMINE LEACHATE HEAD ABOVE CELL FLOOR, H_{EAD} SUBSTRACT FLOOR ELEVATION F_{ELEV} FROM STATIC ELEVATION L_{ELEV}

CELL 5 C/D EXAMPLE:

$$H_{EAD} = [1132.44 - (\Delta 40.33)] - 1062.92$$

NOTE:

❁ REFERENCE ELEVATION SHOWN ARE APPROXIMATE. ACTUAL REFERENCE ELEVATIONS TO BE DETERMINED AND RECORDED AFTER LEACHATE SYSTEM DESIGN HOOKUP/CONSTRUCTION IS COMPLETE

F_{ELEV} SHOWN ARE TAKEN FROM AS-BUILT RECORD DRAWINGS.

DRAWING PREPARED BY:

DIVERSIFIED ENGINEERING INC.

115 Pike Avenue, NE
New Philadelphia, Ohio 44663
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FIG. 3-4

COUNTYWIDE RECYCLING AND DISPOSAL FACILITY
REPUBLIC SERVICES
3619 GRACEMONT STREET S.W.
EAST SPARTA, OHIO 44626
CELL FLOOR COLLECTION SYSTEM - SIDE SLOPE RISER PROFILES

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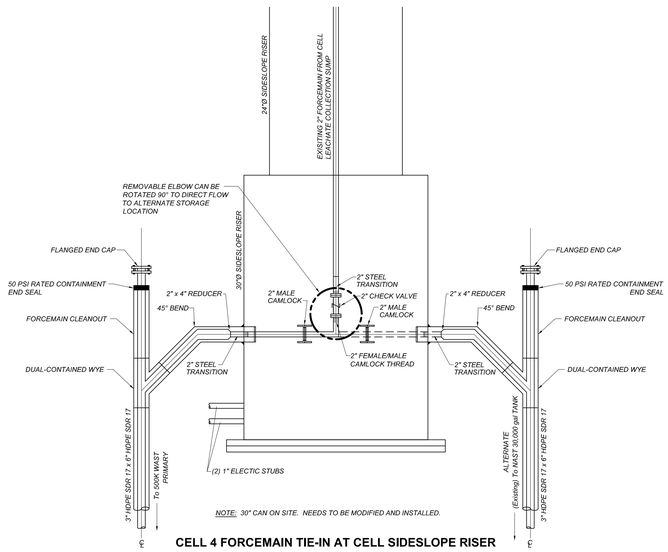
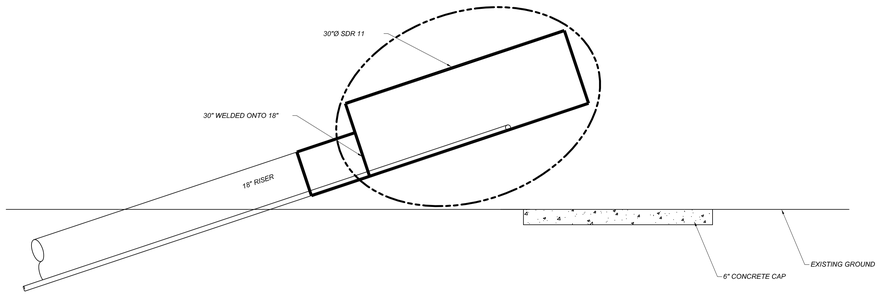


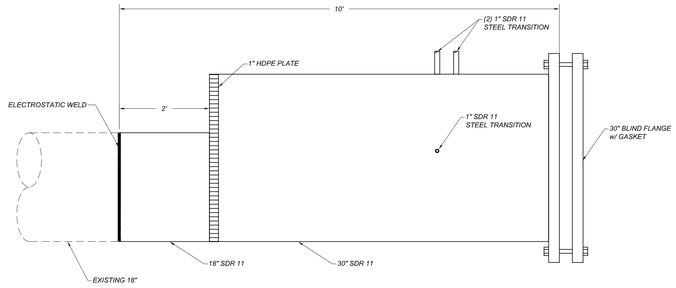
CELL 4 FORCEMAIN TIE-IN AT CELL SIDESLOPE RISER

DETAIL 1
SCALE: *NOT TO SCALE*

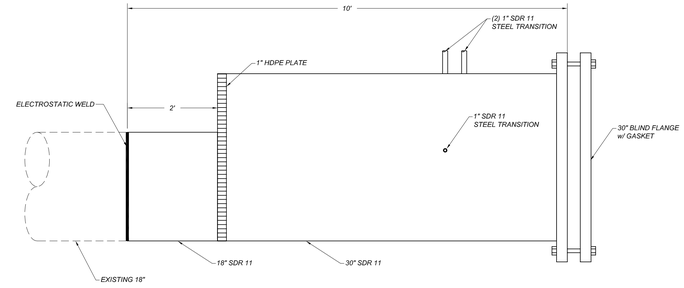


TYPICAL CELL SUMP RISER VAULT ACCESS

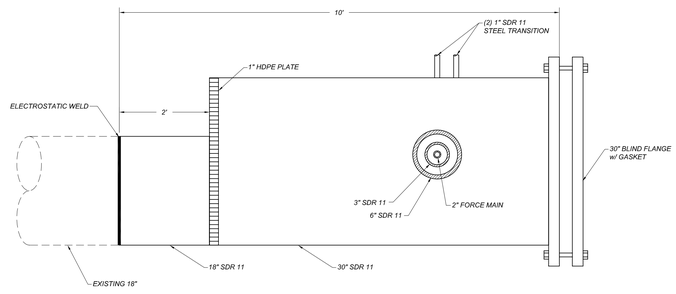
DETAIL 2
SCALE: *NOT TO SCALE*



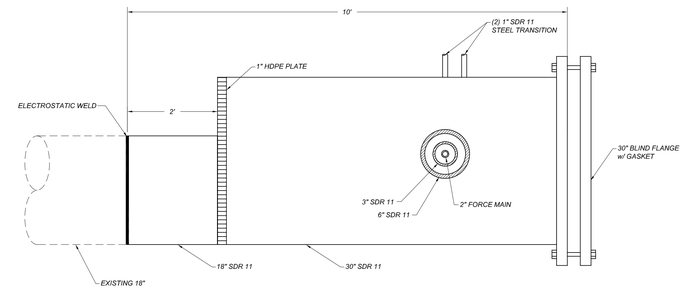
NORTH VIEW



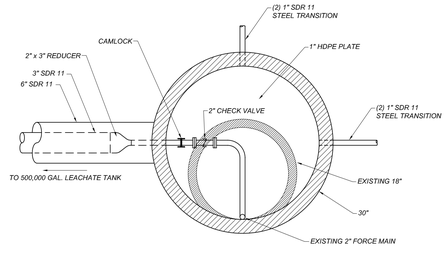
WEST VIEW



SOUTH VIEW



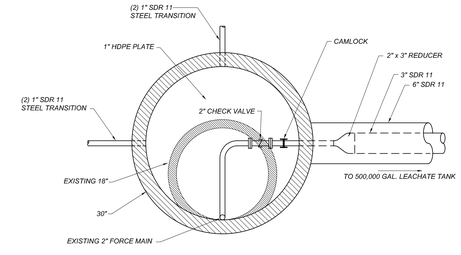
EAST VIEW



END VIEW

CELL 2N / 2S RISER

DETAIL 3
SCALE: *NOT TO SCALE*



END VIEW

CELL 3 RISER

DETAIL 4
SCALE: *NOT TO SCALE*

NOTE:
FOR DETAILED CONSTRUCTION INFORMATION SEE "LEACHATE SYSTEM INPROVEMENTS" DRAWINGS PREPARED BY DIVERSIFIED ENGINEERING INC.

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COUNTYWIDE RECYCLING AND DISPOSAL FACILITY
REPUBLIC SERVICES
3619 GRACEMONT STREET S.W.
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SIDE SLOPE RISER DETAILS

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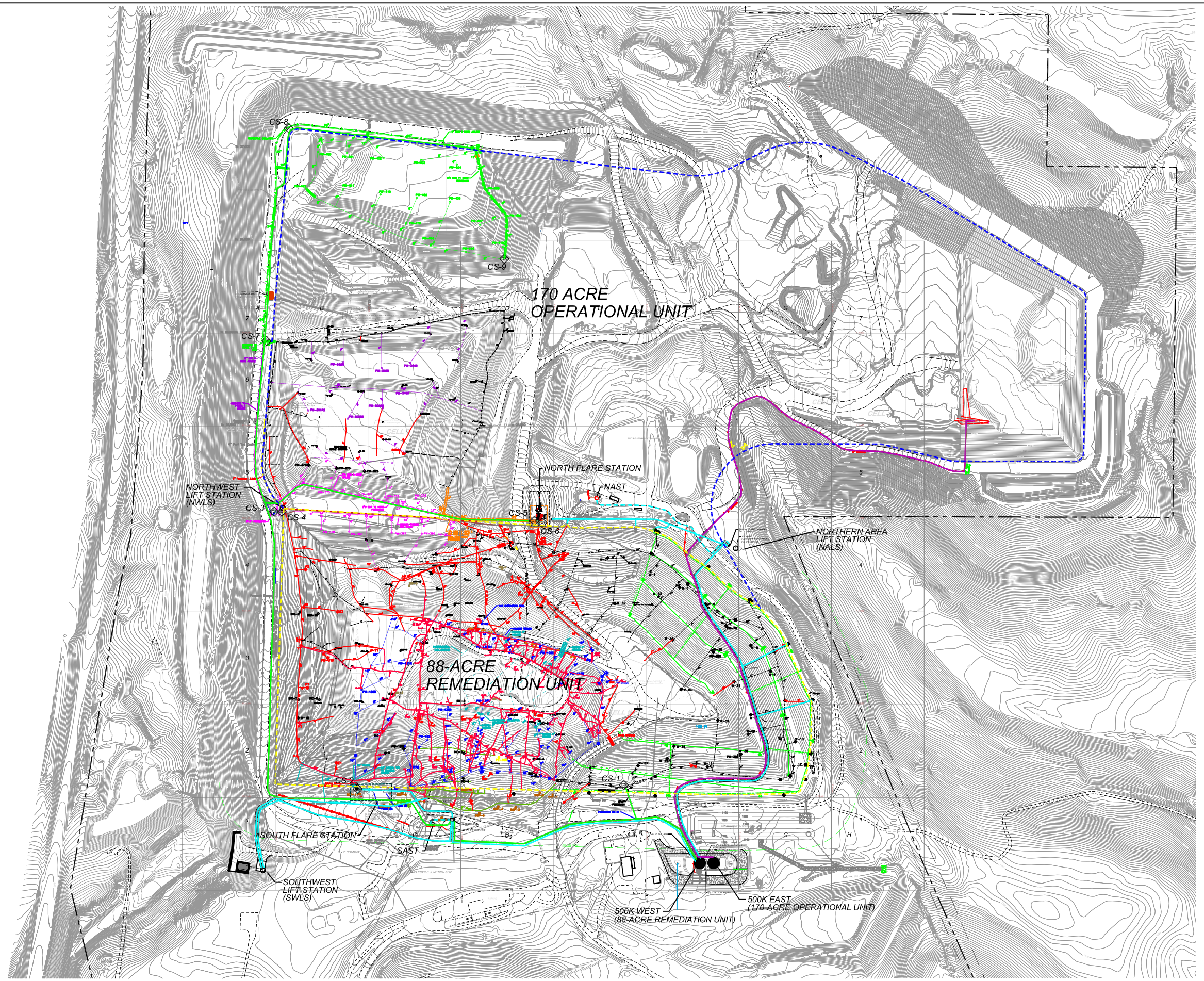
FIG. 3-5



LEGEND

- PERMANENT PROPOSED BELOW GROUND DUAL CONTAINED LEACHATE FM
- PROPOSED GRAVITY FLOW - DUAL-CONTAINED LEACHATE COLLECTION HEADER
- PROPOSED CLEANOUT
- CELL BOUNDARY
- EXISTING CONTOURS
- EXISTING ROADS
- 88 ACRE REMEDIATION UNIT LEACHATE FORCEMAIN
- 170 ACRE OPERATIONAL UNIT LEACHATE FORCEMAIN
- COMBINED SITEWIDE CONDENSATE FORCEMAIN
- 88 ACRE REMEDIATION UNIT
- 170 ACRE OPERATIONAL UNIT
- EXISTING LFG & LEACHATE COLLECTOR
- EXISTING UNDERCAP COLLECTOR
- EXISTING LEACHATE COLLECTION PIPE (CELL FLOOR)
- FUTURE TOE COLLECTOR (CELLS 1, 2 &3) (SHOWN FOR REFERENCE ONLY)
- FUTURE LFG & LEACHATE COLLECTOR (CELLS 1, 2 &3) (SHOWN FOR REFERENCE ONLY)
- FUTURE DOWNSLOPE LEACHATE HEADER PIPE (CELLS 1, 2 &3) (SHOWN FOR REFERENCE ONLY)
- FUTURE UNDERCAP COLLECTOR (CELLS 1, 2 & 3) (SHOWN FOR REFERENCE ONLY)
- DUAL PHASE EGEW DEWATERING WELL LIQUID DISCHARGE LINES

CS-1 CONDENSATE LIFT STATION

L LEACHATE LIFT STATION

NOTE:

THIS DRAWING IS INTENDED FOR ILLUSTRATIVE PURPOSES ONLY. ACTUAL CONDITIONS MAY VARY. REFER TO GCCS MODIFICATIONS DRAWINGS DATED MAY, PREPARED BY CORNERSTONE ENVIROMENTAL GROUP FOR GAS SYSTEM INSTALLATION.

GCCS GAS EXTRACTION & LIQUID DISCHARGE LINES SHOWN ON THIS DRAWING REPRESENT EXISTING AND FUTURE CONDITIONS. THE GCCS DEPICTION WILL BE REVISED WHEN MODIFICATIONS ARE COMPLETE.

N W E S

Scale: 1 in. = 200ft.

0' 200' 400' 600'

Graphic Scale

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COUNTYWIDE RECYCLING AND DISPOSAL FACILITY
REPUBLIC SERVICES
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OVERALL SITE PROCESS DIAGRAM

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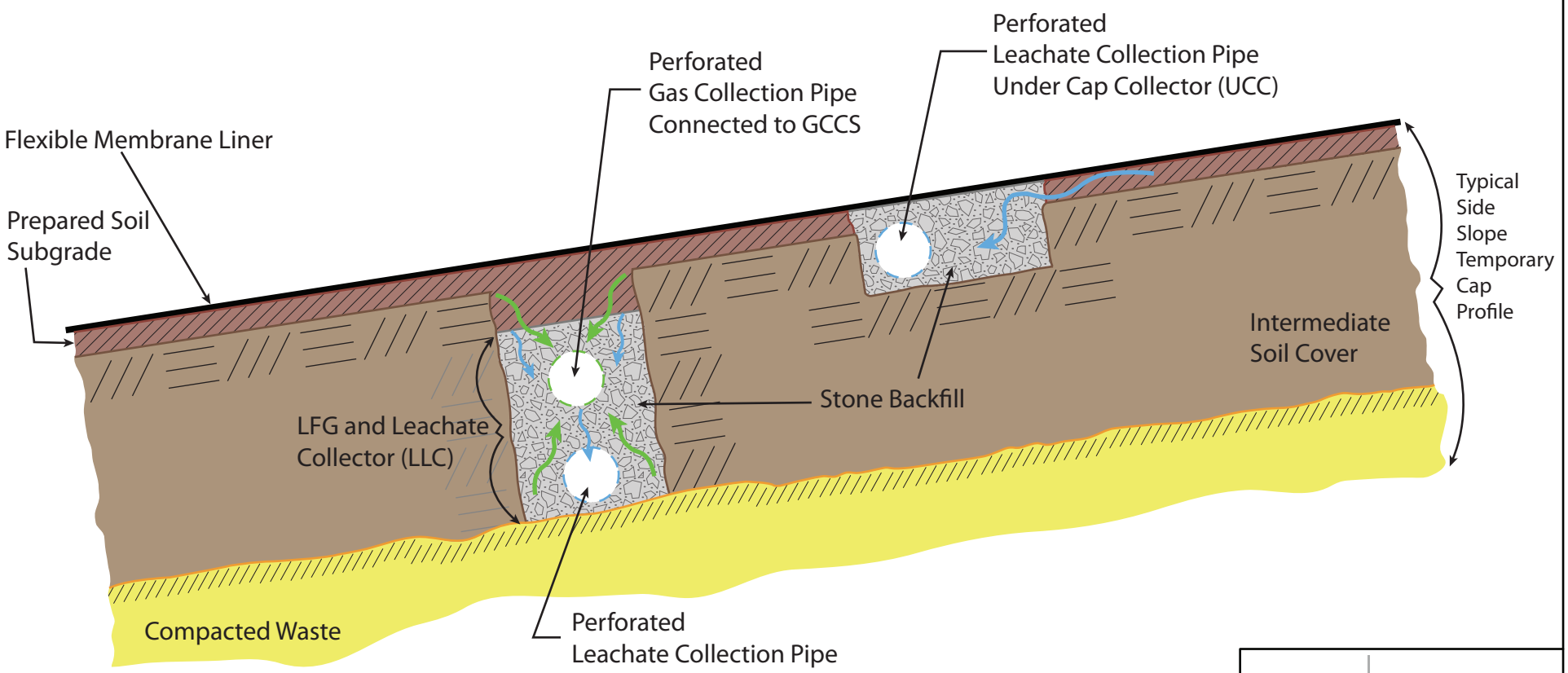
FIG. 3-6



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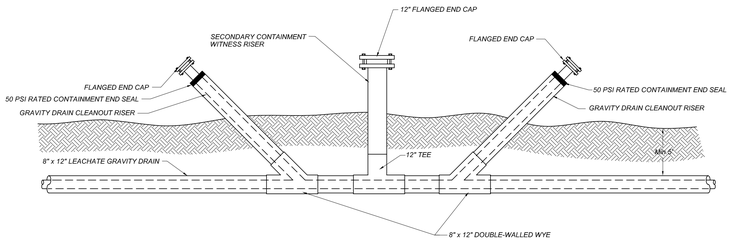
DRAWN BY: CP	DATE: July 22, 2009
CHECKED BY:	EDITED BY:
FILE NAME: SubcapDrain.pdf	

Figure 3-7

88-Acre Remediation Unit Side Slope Subcap Drain System Schematic

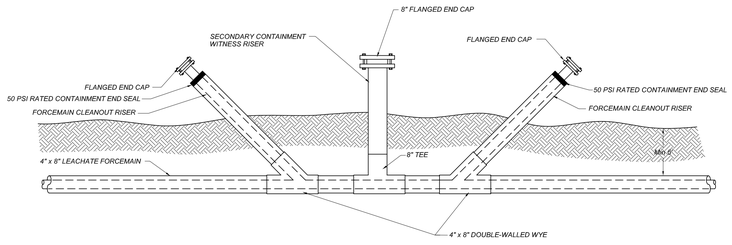
PROJECT NUMBER	SCALE: Not to Scale



TYPICAL DUAL DIRECTION GRAVITY DRAIN CLEANOUT & SECONDARY CONTAINMENT WITNESS RISER

DETAIL 5

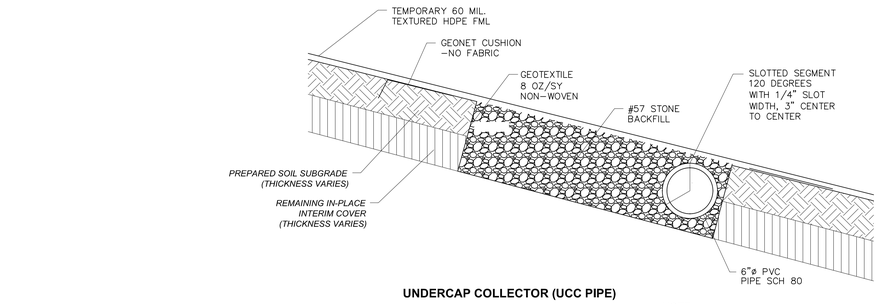
SCALE: NOT TO SCALE



TYPICAL DUAL DIRECTION FORCEMAIN CLEANOUT & SECONDARY CONTAINMENT WITNESS RISER

DETAIL 6

SCALE: NOT TO SCALE



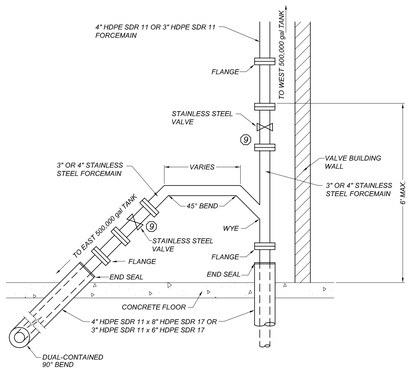
UNDERCAP COLLECTOR (UCC PIPE)

DETAIL 7

SCALE: NOT TO SCALE

NOTE:

1. *DETAILS PROVIDED BY P.J. CARE ASSOCIATES DRAWING D-1, "TEMPORARY CAP DETAILS", DATED 2/18/08.*

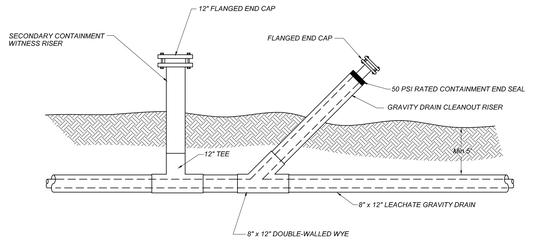


ELEVATION VIEW

TYPICAL FLOW DIRECTION ASSEMBY AT VALVE BUILDING

DETAIL 8

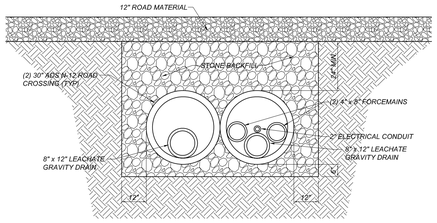
SCALE: NOT TO SCALE



TYPICAL SINGLE DIRECTION GRAVITY DRAIN CLEANOUT & SECONDARY CONTAINMENT WITNESS RISER

DETAIL 11

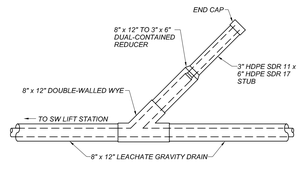
SCALE: NOT TO SCALE



ROAD CROSSING AT SW CORNER LIFT STATION

DETAIL 9

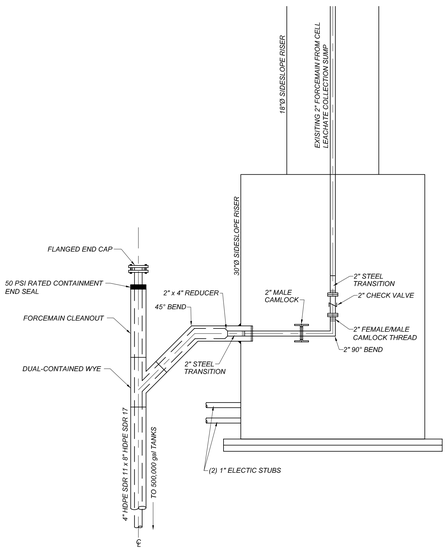
SCALE: NOT TO SCALE



TYPICAL 8" x 12" LEACHATE GRAVITY DRAIN FUTURE STUB

DETAIL 10

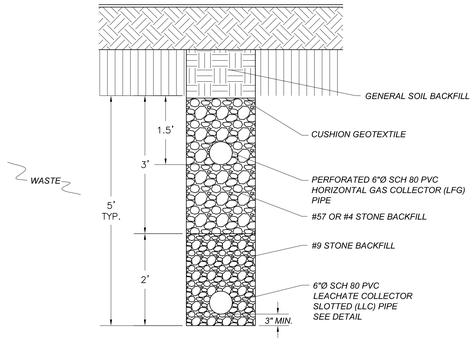
SCALE: NOT TO SCALE



TYPICAL FORCEMAIN TIE-IN AT C-5AB & C-5CD SIDESLOPE RISERS

DETAIL 12

SCALE: NOT TO SCALE



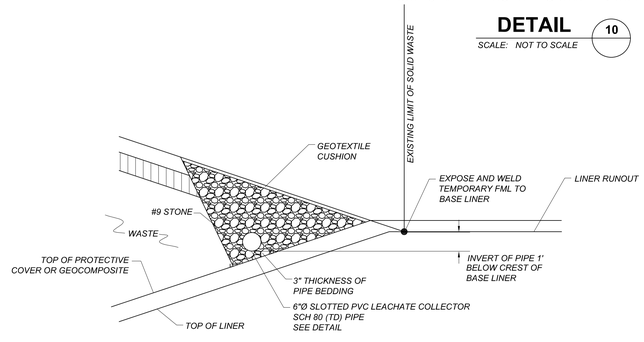
TEMPORARY CAP
LEACHATE (LLC PIPE) & LFG (LFG PIPE) COLLECTORS

DETAIL 13

SCALE: NOT TO SCALE

NOTE:

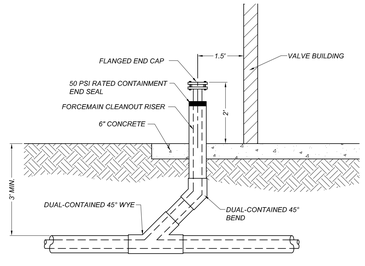
1. *GAS COLLECTOR PIPE PERFORATIONS WILL BE FOUR ½" DIAMETER HOLES AT 90° EVERY 3".*



TEMPORARY CAP TOE COLLECTOR TO PIPE AND TERMINATION AT SOUTH EDGE OF LINER

DETAIL 14

SCALE: NOT TO SCALE



TYPICAL CLEANOUT AT 30,000 GAL TANK VALVE BUILDING

DETAIL 15

SCALE: NOT TO SCALE

NOTE:

FOR DETAILED CONSTRUCTION INFORMATION SEE "LEACHATE SYSTEM IMPROVEMENTS" DRAWINGS PREPARED BY DIVERSIFIED ENGINEERING INC.

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COUNTYWIDE RECYCLING AND DISPOSAL FACILITY
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LEACHATE COLLECTION SYSTEM TYPICAL DETAILS

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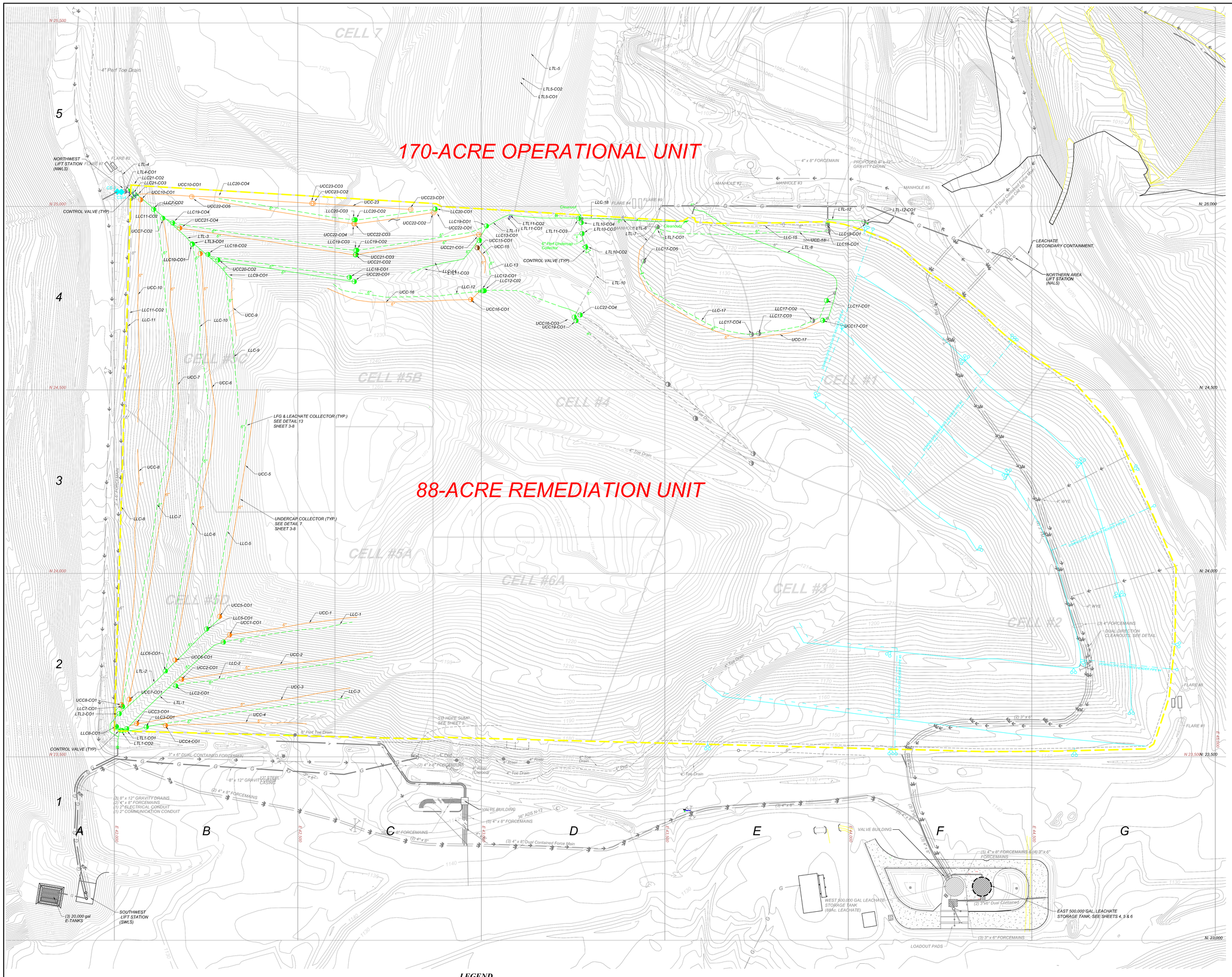
FIG. 3-8



LEGEND

- PERMANENT PROPOSED BELOW GROUND DUAL CONTIANED LEACHATE FM
- PROPOSED GRAVITY FLOW - DUAL-CONTAINED LEACHATE COLLECTION HEADER
- PROPOSED CLEANOUT
- CELL BOUNDARY
- EXISTING CONTOURS
- EXISTING ROADS
- EXISTING UNDERCAP COLLECTOR
- EXISTING LFG & LEACHATE COLLECTOR
- FUTURE LFG & LEACHATE COLLECTOR (CELLS 1, 2 & 3) (SHOWN FOR REFERENCE ONLY)
- FUTURE DOWNSLOPE LEACHATE HEADER PIPE (CELLS 1, 2 & 3) (SHOWN FOR REFERENCE ONLY)
- FUTURE UNDERCAP COLLECTOR (CELLS 1, 2 & 3) (SHOWN FOR REFERENCE ONLY)

NOTE:

FOR DETAILED CONSTRUCTION INFORMATION SEE "LEACHATE SYSTEM INPROVEMENTS" DRAWINGS PREPARED BY DIVERSIFIED ENGINEERING INC.

N
W E
S

Scale: 1 in. = 100ft.

0' 100' 200' 300'

Graphic Scale

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COUNTYWIDE RECYCLING AND DISPOSAL FACILITY
REPUBLIC SERVICES
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SUBCAP DRAIN SYSTEM PLAN

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FIG. 3-9

170-ACRE OPERATIONAL UNIT

88-ACRE REMEDIATION UNIT

CELL 7
CELL #5C
CELL #5B
CELL #4
CELL #1
CELL #5A
CELL #6A
CELL #3
CELL #5D
CELL #2

4" Perf Toe Drain
NORTHWEST LIFT STATION (NWLS)
FLARE #2
FLARE #7
LLC21-CO2
LLC21-CO3
LLC21-CO4
LLC21-CO5
LLC-21
LLC11-CO1
LLC11-CO2
LLC-11
LLC-8
LLC-4
LTC8-CO1
LLC21-CO1
LLC-17
FLARE #4
FLARE #9
LLC17-CO2
LLC17-CO1
LTL10-CO4
LTL10-CO3
MANHOLE #1
LTL11-CO3
LTL10-CO2
LTL10-CO1
LTL-10
6" Toe Collector
MANHOLE #2
MANHOLE #3
4" x 8" FORCEMAIN
PROPOSED 8" x 12" GRAVITY DRAIN
MANHOLE #5
LLC-15
MANHOLE #4
LLC16-CO1
3" x 6" Dual Contained Force Main (From Cell 6)
LEACHATE SECONDARY CONTAINMENT
NORTHERN AREA LIFT STATION (NALS)
12" x 18"
TO BE REMOVED
4" WYE
(3) 4" FORCEMAINS
DUAL DIRECTION CLEANOUTS, SEE DETAIL
FLARE #8
FLARE #1
(2) 3" x 6"
TOE DRAIN PIPE (TYP.) SEE DETAIL 14 SHEET 3-8
TD-9
TD-8
TD-7
TD-6
6" Port Toe Drain
TD-10
TD-5
TD-4
TD-3
TD-2
TD-1
TD-11
TD-12
TD-13
5'ID HDPE SUMP SEE SHEET 2
4" Toe Drain
4" Riser (Capped)
4" Riser
4" Toe Drain
4" Toe Drain
4" Toe Drain
4" Toe Drain
4" Toe Drain
3" x 6" DUAL-CONTAINED FORCEMAIN
8" x 12" GRAVITY DRAIN
12" STEEL CASING
(2) 4" x 8" FORCEMAINS
(2) 8" x 12" GRAVITY DRAINS
(2) 4" x 8" FORCEMAINS
(1) 2" ELECTRICAL CONDUIT
(1) 2" COMMUNICATION CONDUIT
(2) 4" x 8" FORCEMAINS
VALVE BUILDING
36" ADS N-12
(5) 4" x 8" FORCEMAINS
(3) 4" x 8" Dual Contained Force Main
(3) 4" x 6"
(3) 4" x 6"
VALVE BUILDING
(5) 4" x 8" FORCEMAINS & (4) 3" x 6" FORCEMAINS
(2) 3"x6" Dual Contained
(3) 3" x 6" FORCEMAINS
LOADOUT PADS
WEST 500,000 GAL LEACHATE STORAGE TANK (88Ac. LEACHATE)
EAST 500,000 GAL. LEACHATE STORAGE TANK, SEE SHEETS 4, 5 & 6
(3) 20,000 gal E-TANKS
SOUTHWEST LIFT STATION (SWLS)
Scale
N: 25,000
N: 24,500
N: 24,000
N: 23,500
N: 23,000
E 43,500
E 44,000
1
2
3
4
5
A
B
C
D
E
F
G

LEGEND

- PERMANENT PROPOSED BELOW GROUND DUAL CONTIANED LEACHATE FM
- PROPOSED GRAVITY FLOW - DUAL-CONTAINED LEACHATE COLLECTION HEADER
- PROPOSED CLEANOUT
- CELL BOUNDARY
- 1120 EXISTING CONTOURS
- EXISTING ROADS
- EXISTING DEEP TRENCH DRAIN
- EXISTING TOE DRAIN COLLECTION PIPE
- FUTURE TOE COLLECTOR (CELLS 1, 2 & 3) (SHOWN FOR REFERENCE ONLY)

NOTE:
FOR DETAILED CONSTRUCTION INFORMATION SEE "LEACHATE SYSTEM IMPROVEMENTS" DRAWINGS PREPARED BY DIVERSIFIED ENGINEERING INC.

N
W E
S

Scale: 1 in. = 100ft.

0' 100' 200' 300'

Graphic Scale

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COUNTYWIDE RECYCLING AND DISPOSAL FACILITY
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LEACHATE TOE DRAIN SYSTEM

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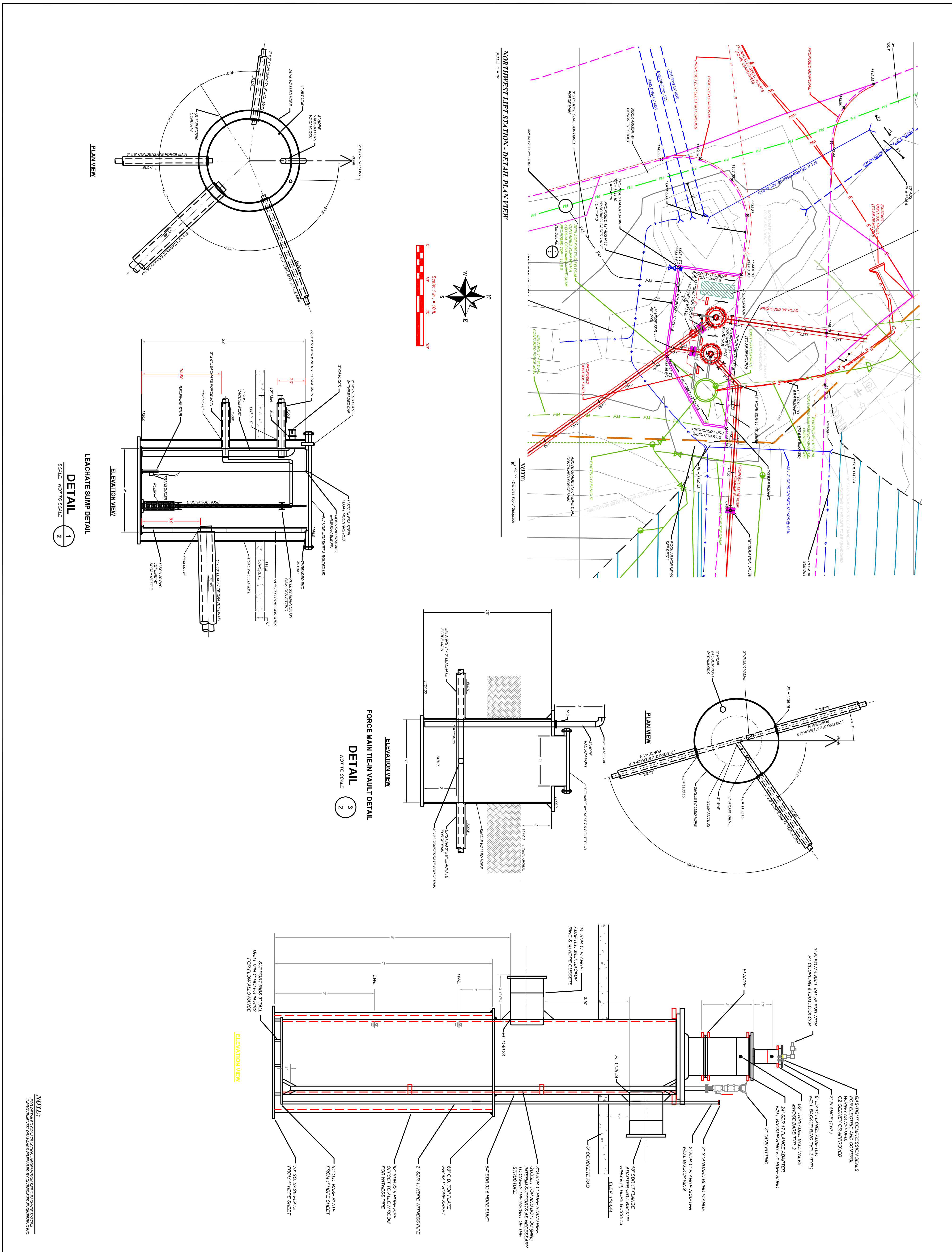
FIG. 3-10

L:\work\103345\CAD\Civil\FIG 3-11.dwg, 7/27/2009 3:53:42 PM, Adobe PDF, 11 x 17, 1:2.71336



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NORTHWEST LIFT STATION SITE PLAN AND DETAILS

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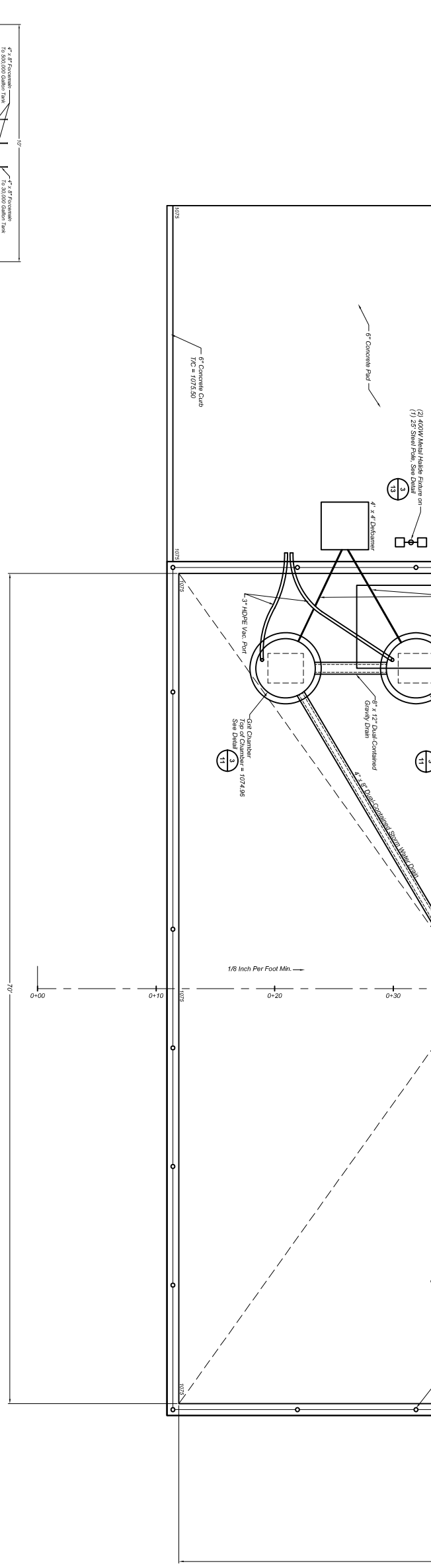
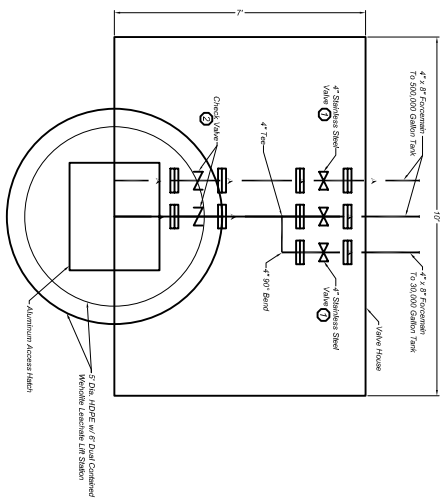
FIG. 3-11





VALVE HOUSE PLUMBING SCHEMATIC

DETAIL

SCALE: NOT TO SCALE

CODED NOTES:

1.) STAINLESS STEEL VALVE - OHIO VALVE CO. FULL PORT BALL VALVE, FLANGED ENDS, LOCKING HANDLE, PART #250F-150 (OR EQUAL)

2.) CHECK VALVE - APCO; RUBBER-LINED, HYPALON FLAPPER S-100R 4" (OR EQUAL).

VALVE BUILDING NOTES:

1.) CONTRACTOR SHALL PROVIDE (2) 65W INCANDESCENT FIXTURES.

2.) CONTRACTOR SHALL PROVIDE (1) GFCI SERVICE RECEPTACLE.

3.) CONTRACTOR SHALL PROVIDE (1) 500W ELECTRIC UNIT HEATER.

Scale: 1 in. = 4ft.

Graphic Scale 0' 4' 8' 12'

NOTE:

FOR DETAILED CONSTRUCTION INFORMATION SEE "LEACHATE SYSTEM IMPROVEMENTS" DRAWINGS PREPARED BY DIVERSIFIED ENGINEERING INC.

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NORTHERN AREA SECONDARY CONTAINMENT PLAN & DETAILS

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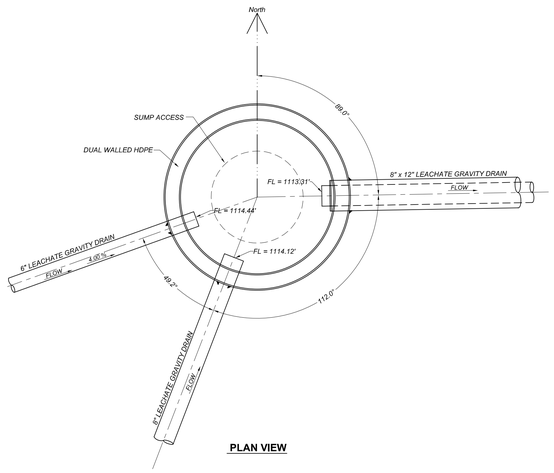
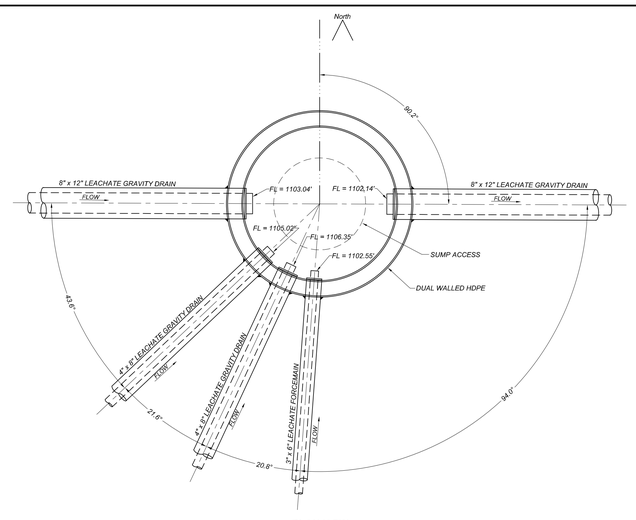
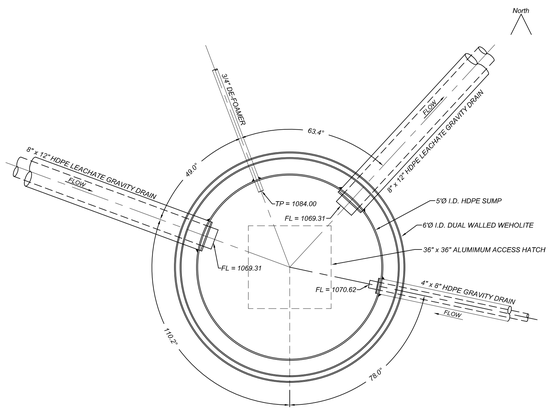
FIG. 3-12



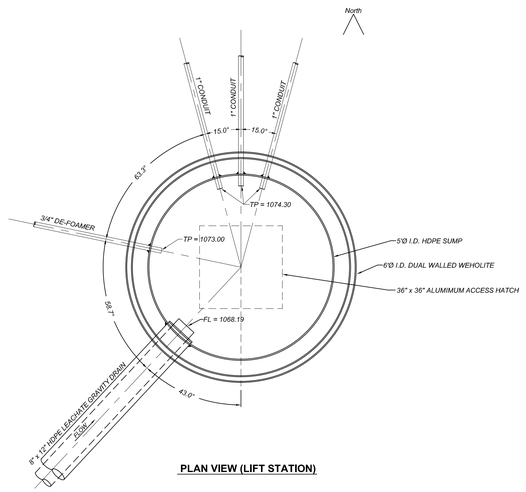
PLAN VIEW



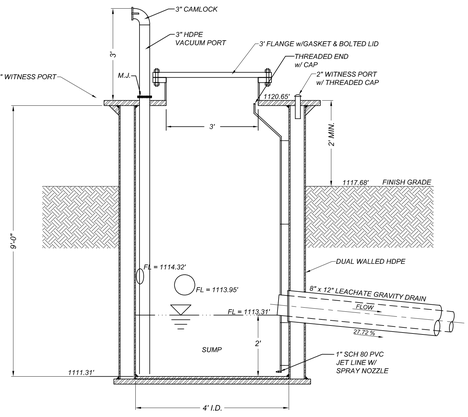
PLAN VIEW



PLAN VIEW (GRIT CHAMBER)



PLAN VIEW (LIFT STATION)

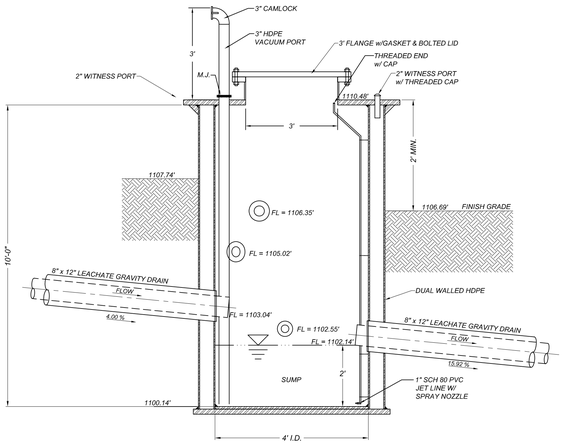


ELEVATION VIEW

HDPE MANHOLE #1

DETAIL

SCALE: NOT TO SCALE

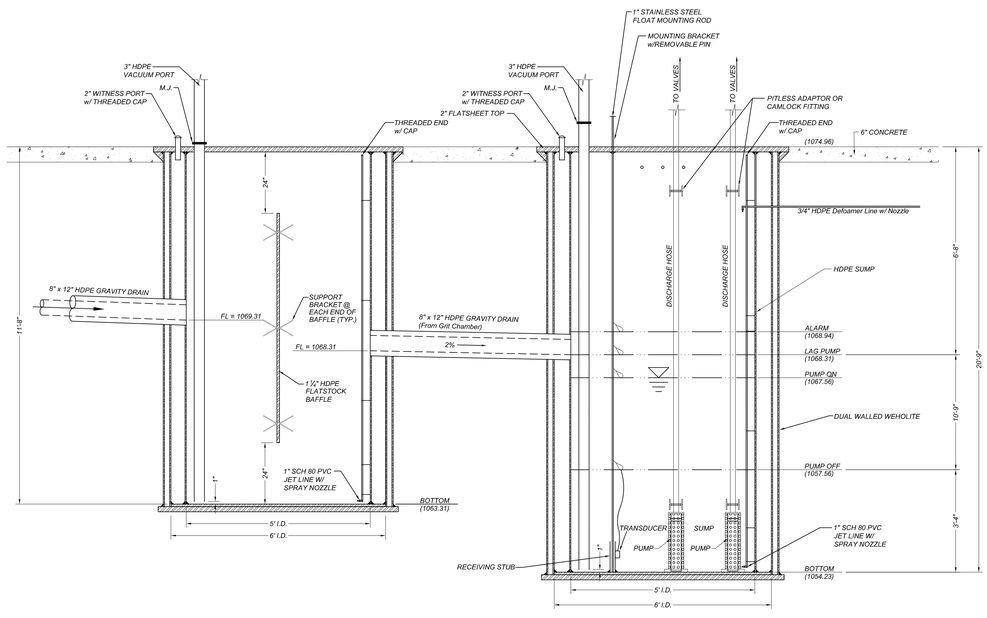


ELEVATION VIEW

HDPE MANHOLE #2

DETAIL

SCALE: NOT TO SCALE



ELEVATION VIEW

NORTHERN AREA LIFT STATION

DETAIL

SCALE: NOT TO SCALE

NOTE:

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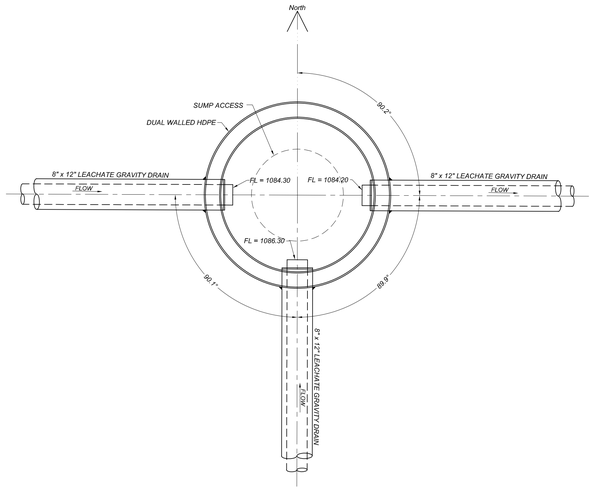
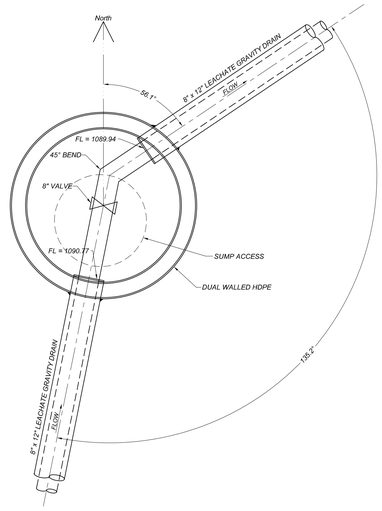
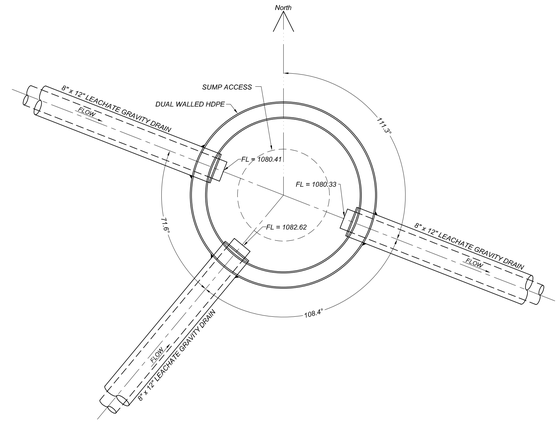
FIG. 3-13



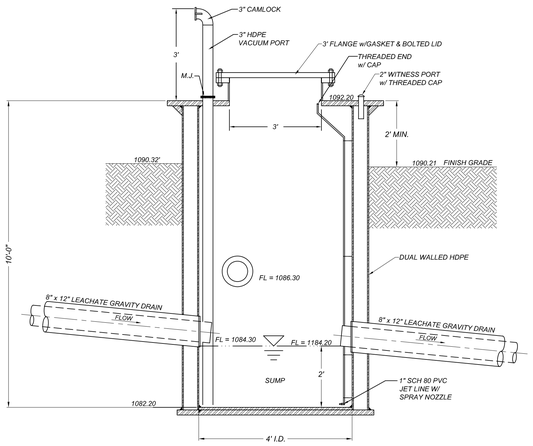
PLAN VIEW



PLAN VIEW



PLAN VIEW

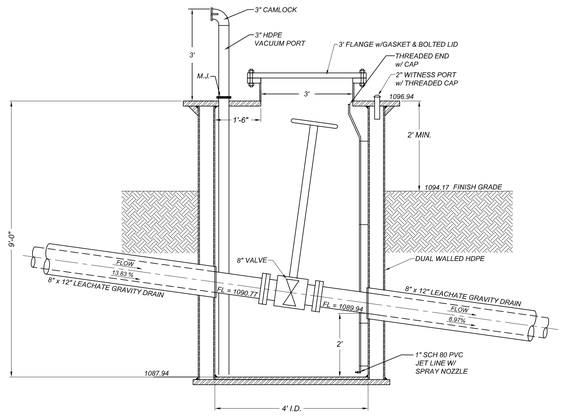


ELEVATION VIEW

HDPE MANHOLE #3

DETAIL

SCALE: NOT TO SCALE

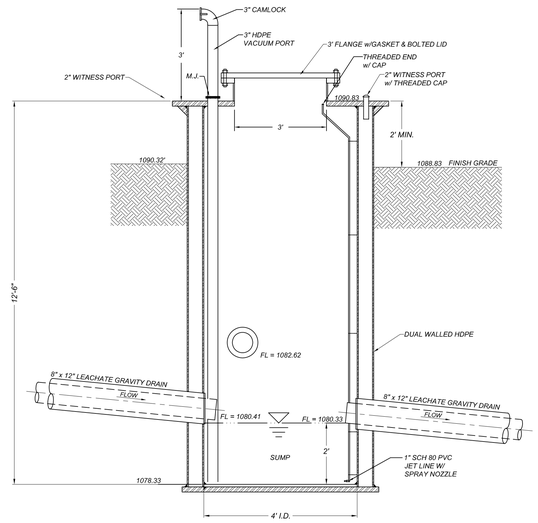


ELEVATION VIEW

HDPE MANHOLE #4

DETAIL

SCALE: NOT TO SCALE



ELEVATION VIEW

HDPE MANHOLE #5

DETAIL

SCALE: NOT TO SCALE

NOTE:

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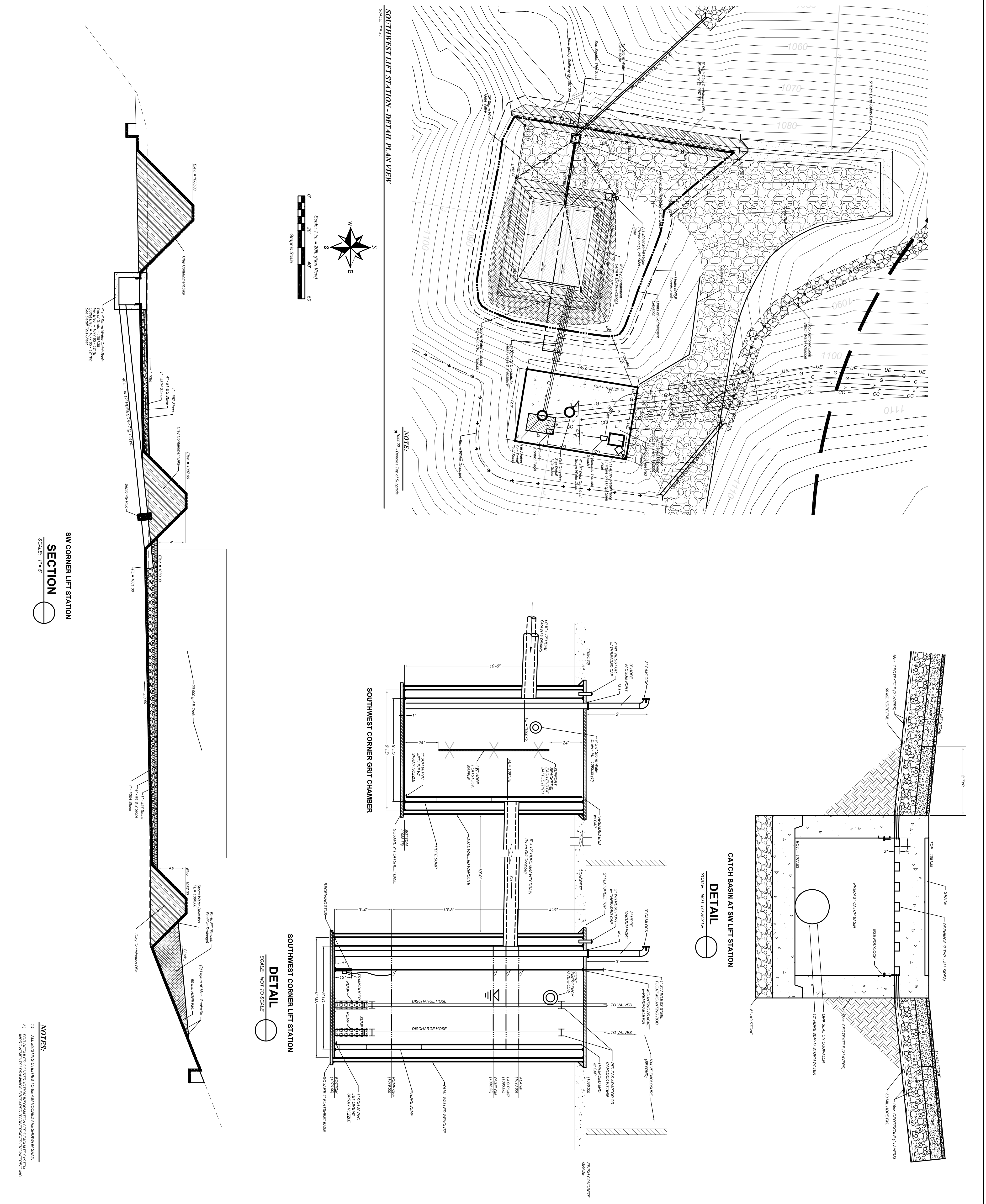
FIG. 3-14



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SOUTHWEST LIFT STATION SITE PLAN AND DETAILS

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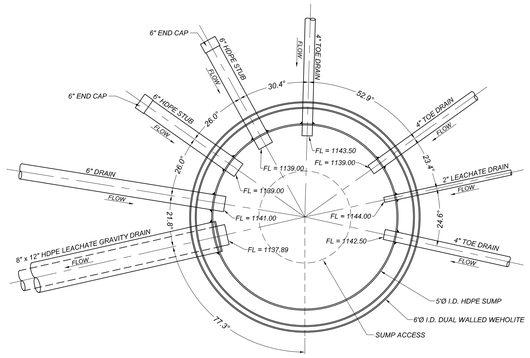
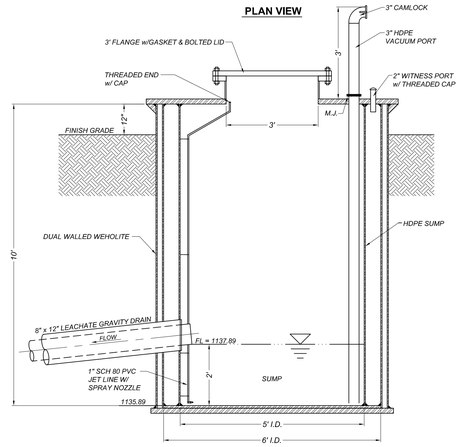
FIG. 3-15



PLAN VIEW

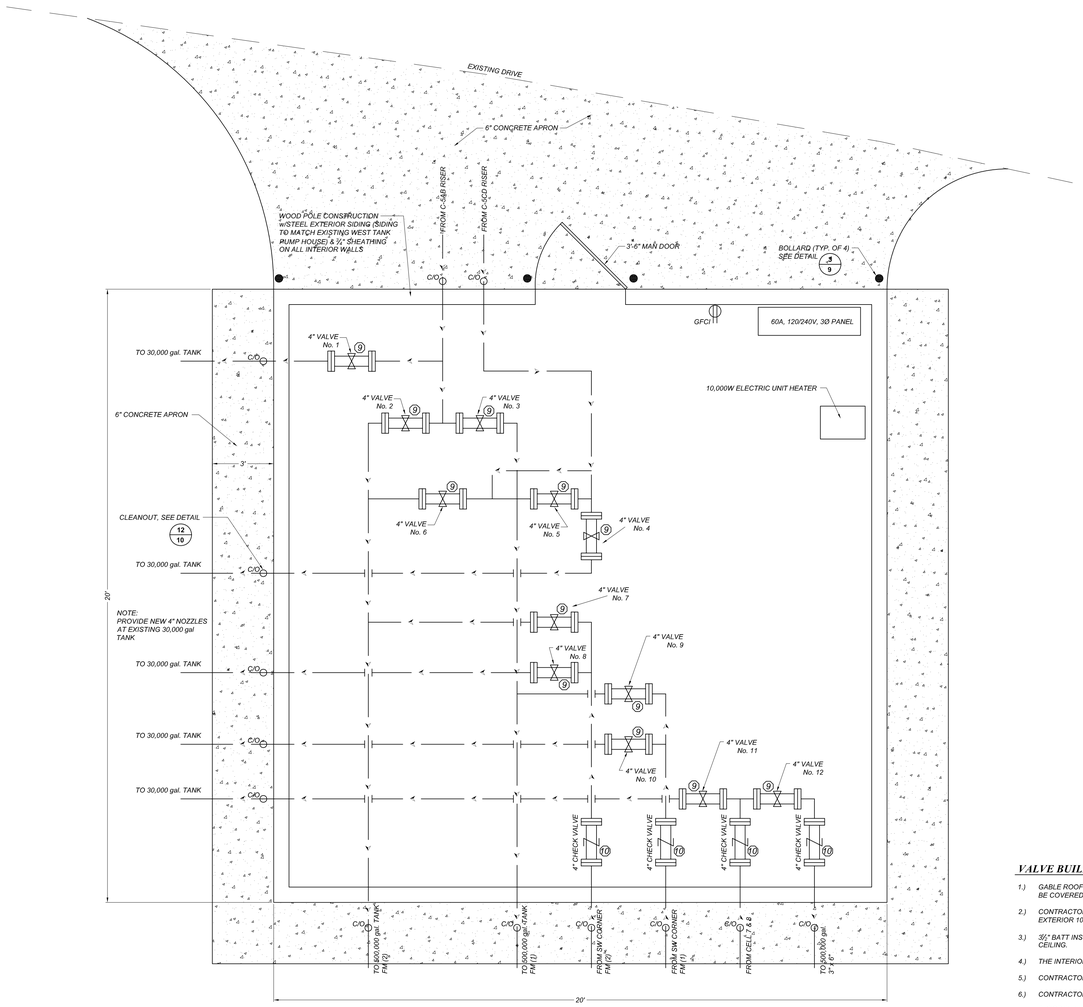


ELEVATION VIEW

PROPOSED 8" x 12" LEACHATE GRAVITY DRAIN SUMP

DETAIL

SCALE: NOT TO SCALE



PLAN VIEW

VALVE BUILDING AT 30,000 gal LEACHATE TANK - PIPING SCHEMATIC

DETAIL

SCALE: NOT TO SCALE

VALVE BUILDING NOTES:

1.) GABLE ROOF SHALL SLOPE NO LESS THAN 2/12 PITCH. ROOF SHALL BE COVERED WITH STEEL ROOFING TO MATCH EXISTING WEST TANK PUMP HOUSE.

2.) CONTRACTOR SHALL PROVIDE (3) 2-LAMP (32W LAMPS), FLUORESCENT STRIP LIGHTS & (1) EXTERIOR 100W WALL PACK MOUNTED NEAR MAN DOOR.

3.) 3½" BATT INSULATION SHALL BE PROVIDED IN WALL CAVITIES AND 6" BATT ABOVE FINISHED CEILING.

4.) THE INTERIOR CEILING SHALL BE FINISHED WITH WHITE METAL SIDING.

5.) CONTRACTOR SHALL FURNISH A CEILING-MOUNTED 10,000W ELECTRIC UNIT HEATER.

6.) CONTRACTOR SHALL PROVIDE (1) SINGLE FACE, WALL-MOUNTED EMERGENCY EXIT/LIGHT.

7.) FLOOR SHALL BE 6" CONCRETE w/6 x 6 WWM.

8.) CONTRACTOR SHALL PROVIDE (1) GFCI RECEPTACLE.

9.) VALVES TO BE OHIO VALVE CO., 316 STAINLESS STEEL FULL PORT BALL VALVE, FLANGED ENDS & LOCKING HANDLE - PART #266F-150 (OR EQUAL).

10.) CHECK VALVES TO BE APCO S-100R, 4" RUBBER-LINED, HYPALON FLAPPER (OR EQUAL).

NOTE:

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SOUTHWEST AREA VALVE BUILDING & SUMP DETAILS

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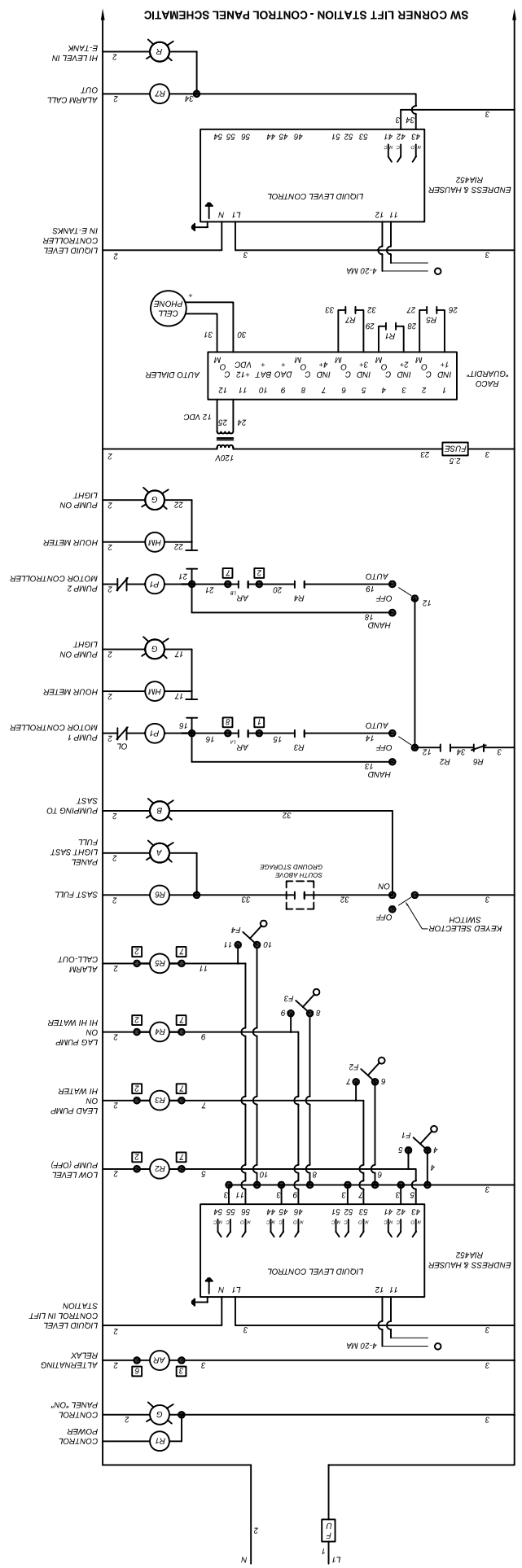
FIG. 3-16

SW CORNER LIFT STATION - CONTROL PANEL SCHEMATIC

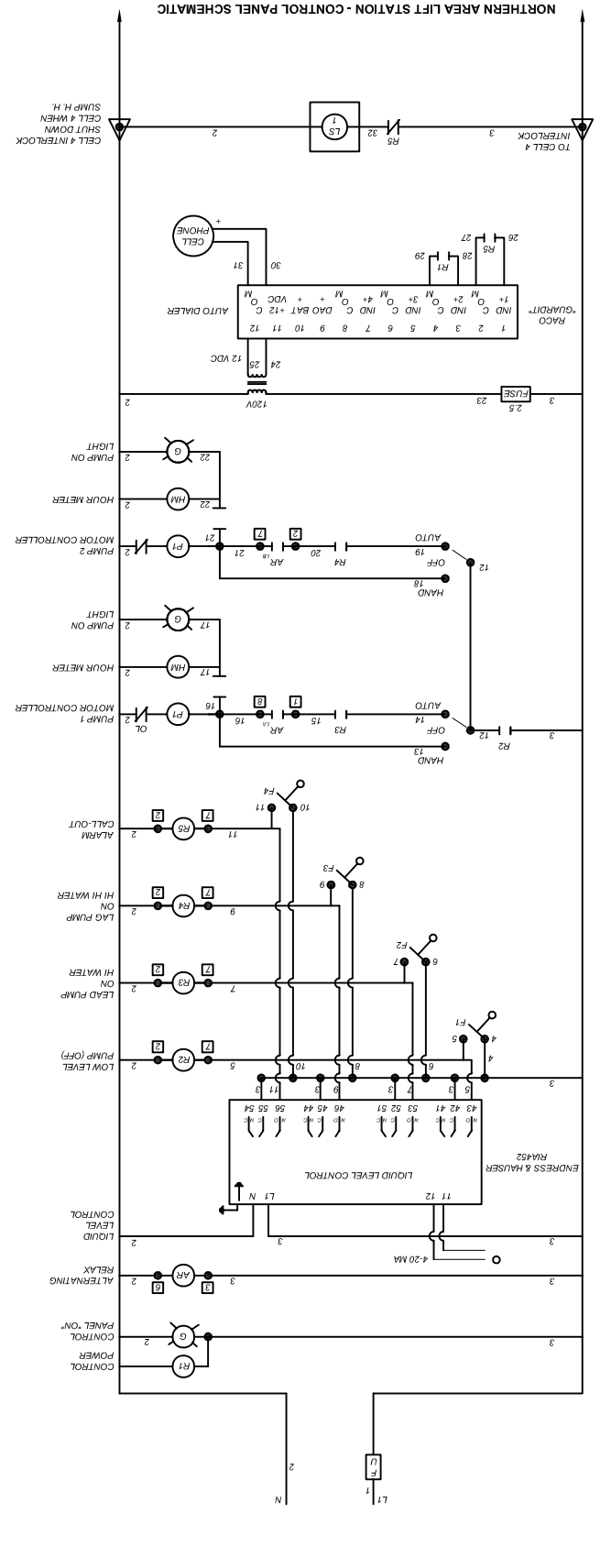


DETAIL

SCALE: NOT TO SCALE

1 / 13

NORTHERN AREA LIFT STATION - CONTROL PANEL SCHEMATIC

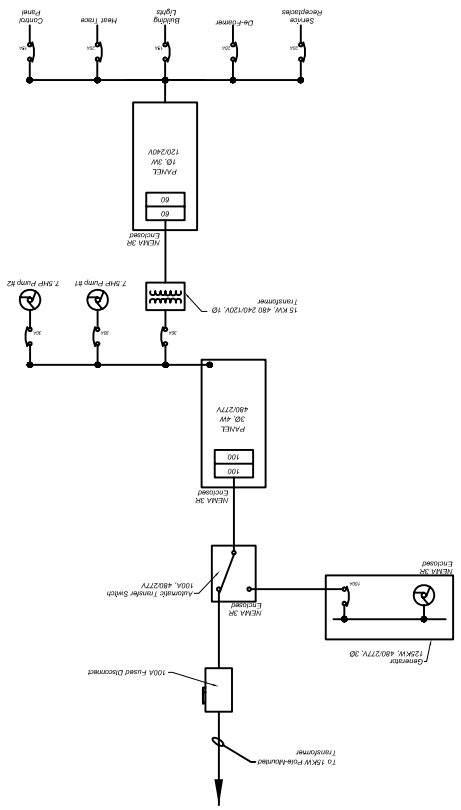


DETAIL

SCALE: NOT TO SCALE

2 / 13

SW CORNER LIFT STATION - SERVICE RISER DIAGRAM

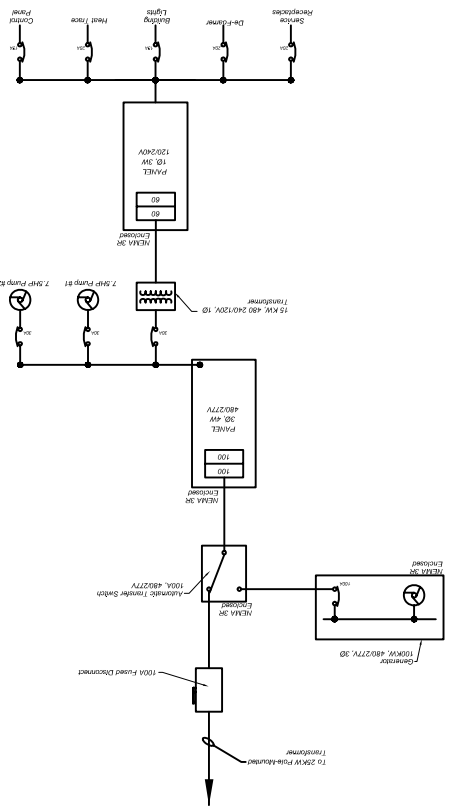


DETAIL

SCALE: NOT TO SCALE

4 / 13

NORTHERN AREA LIFT STATION - SERVICE RISER DIAGRAM

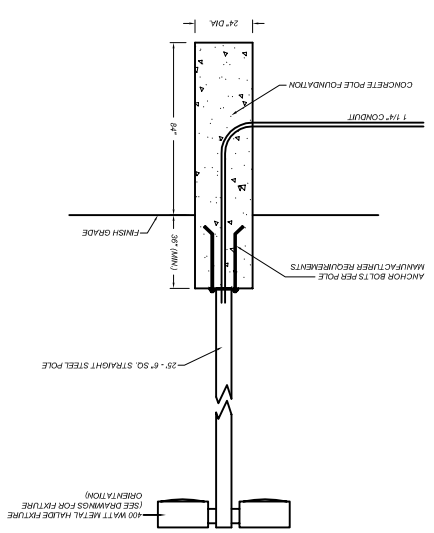


DETAIL

SCALE: NOT TO SCALE

5 / 13

POLE BASE DETAIL



DETAIL

SCALE: NOT TO SCALE

3 / 13

GENERAL NOTES:

1.) ALL WORK MUST BE IN STRICT COMPLIANCE WITH THE 2006 NATIONAL ELECTRIC CODE

2.) ALL ELECTRICAL WORK SHALL BE COMPLETED BY AN INDIVIDUAL OR BUSINESS LICENSED BY THE OHIO CONSTRUCTION INDUSTRY LICENSING BOARD AS REQUIRED BY ORC-4740 AND OAC-4141-16.

3.) ELECTRIC CONTRACTOR SHALL FURNISH AND INSTALL 400W METAL HALIDE FIXTURES ON 25', 6" SQ. STRAIGHT STEEL POLES.

4.) ELECTRIC CONTRACTOR SHALL POUR A CONCRETE FOUNDATION FOR EACH POLE AS SHOWN IN THE "POLE BASE DETAIL".

5.) ELECTRIC CONTRACTOR SHALL PROVIDE A 8' (MIN.) DRIVEN GROUND ROD AT EACH POLE IN ACCORDANCE WITH N.E.C. ARTICLE 250.

6.) ELECTRIC CONTRACTOR SHALL BE RESPONSIBLE FOR AIMING THE FIXTURES TO PROVIDE OPTIMUM ILLUMINATION.

7.) LIFT STATION PUMPS TO BE GRUNDFOS 150S75-4 IN-CASE. IN HDPE PUMP STAND (OR EQUAL).

GENERAL NOTES:

1.) ELECTRICAL CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS TO OWNER UPON COMPLETION OF WORK

2.) FOR DETAILED CONSTRUCTION INFORMATION SEE "LEACHATE SYSTEM IMPROVEMENTS" DRAWINGS PREPARED BY DIVERSIFIED ENGINEERING INC.

FIG. 3-17

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REPUBLIC SERVICES
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COUNTYWIDE RECYCLING AND DISPOSAL FACILITY

LIFT STATION ELECTRICAL SCHEMATICS

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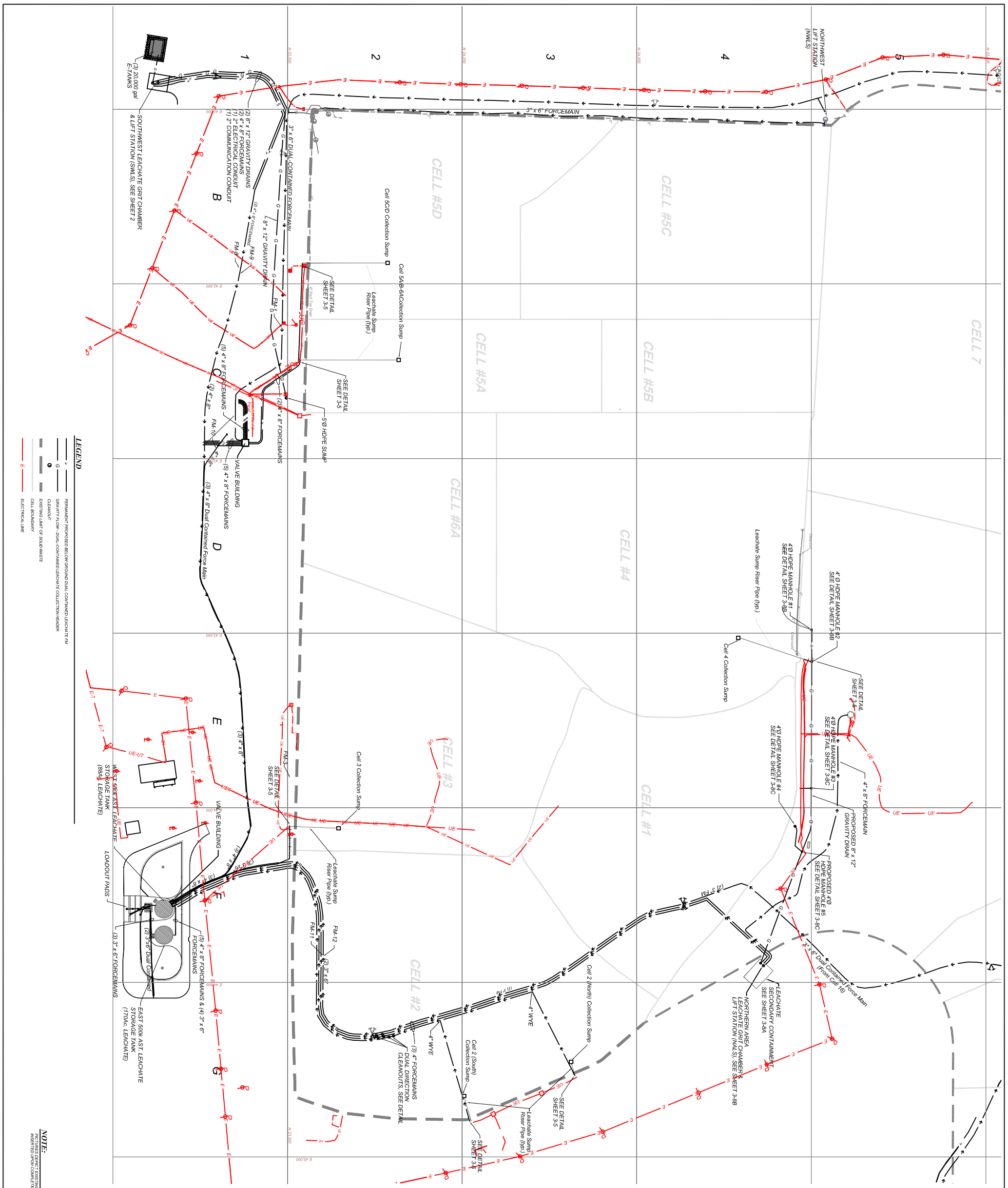
L:\work\103345\CAD\Civil\FIG 3-18.dwg, 7/27/2009 3:54:40 PM, Adobe PDF, 11 x 17, 1:2.68052



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88-ACRE CELL SUMP, LIFT STATIONS AND FORCEMAIN SITE PLAN

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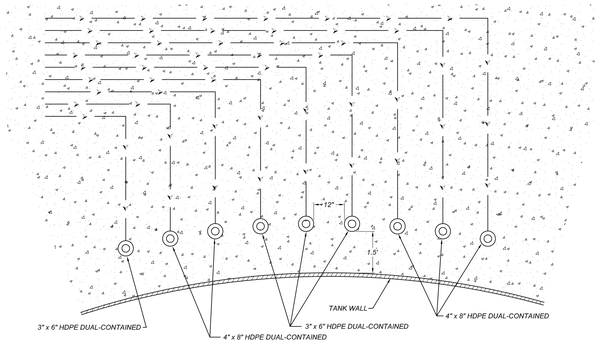
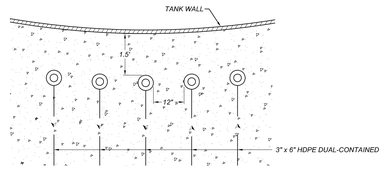
FIG. 3-18



FORCEMAIN AT EAST 500,000 gal. LEACHATE TANK (NORTH SIDE)

DETAIL

SCALE: NOT TO SCALE



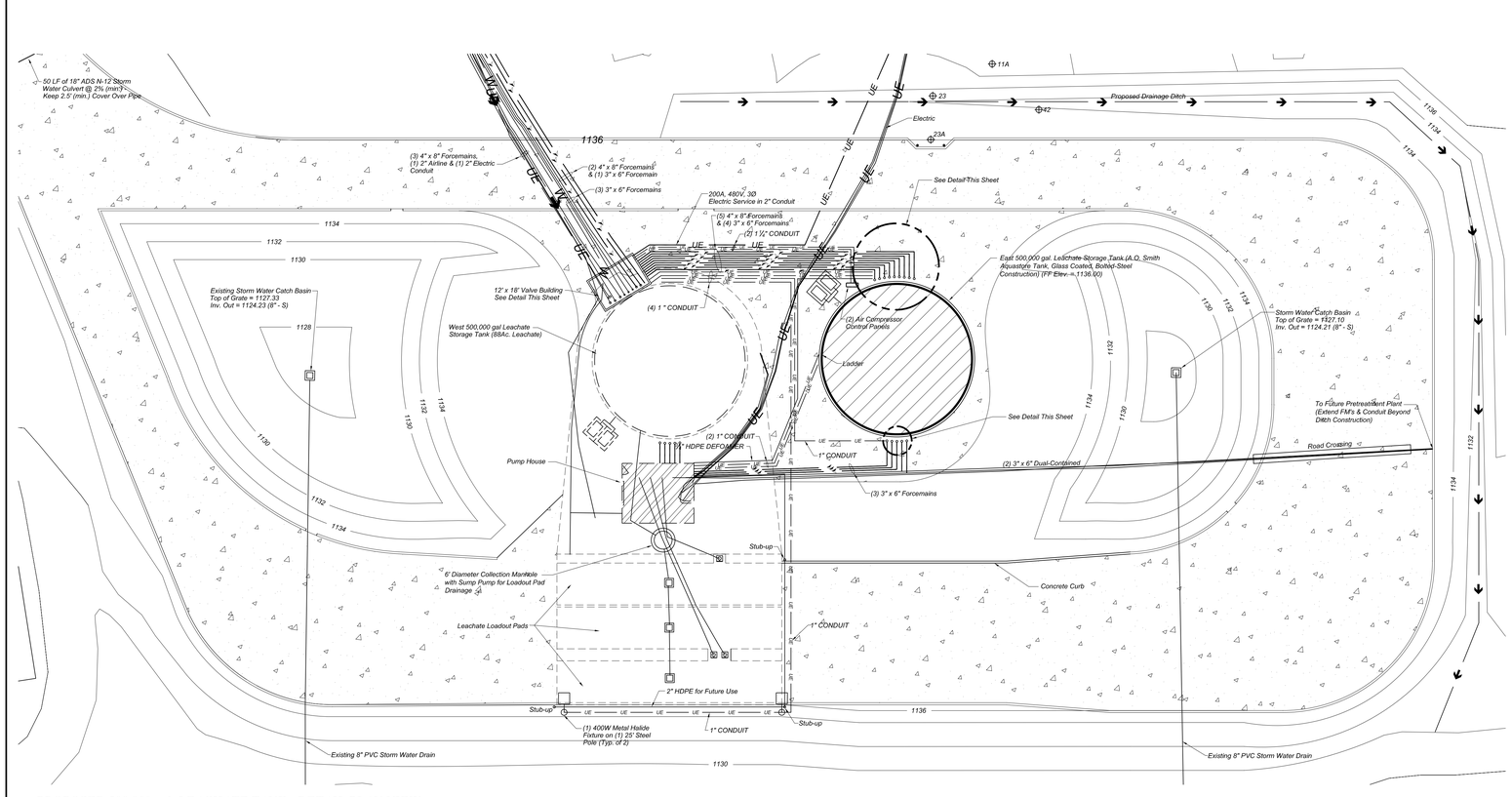
FORCEMAIN AT EAST 500,000 gal. LEACHATE TANK (SOUTH SIDE)

DETAIL

SCALE: NOT TO SCALE

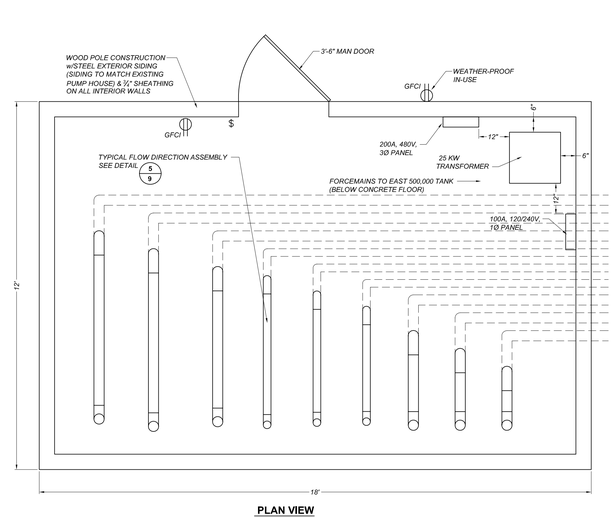
LEGEND

- PERMANENT BELOW GROUND DUAL-CONTIANED LEACHATE FM
- GRAVITY FLOW - DUAL-CONTAINED LEACHATE COLLECTION HEADER
- CLEANOUT
- EXISTING LIMIT OF SOLID WASTE
- CELL BOUNDARY
- 1120 EXISTING CONTOURS
- EXISTING ROADS



PROPOSED 500,000 gal. LEACHATE TANK - DETAIL PLAN VIEW

SCALE: 1" = 20'



PLAN VIEW

WEST 500,000 gal. LEACHATE TANK VALVE BUILDING

DETAIL

SCALE: NOT TO SCALE

Scale: 1 in. = 20ft. (Plan View)

0' 20' 40' 60'

Graphic Scale

NOTE:

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500k TANKS PLAN VIEW & DETAILS

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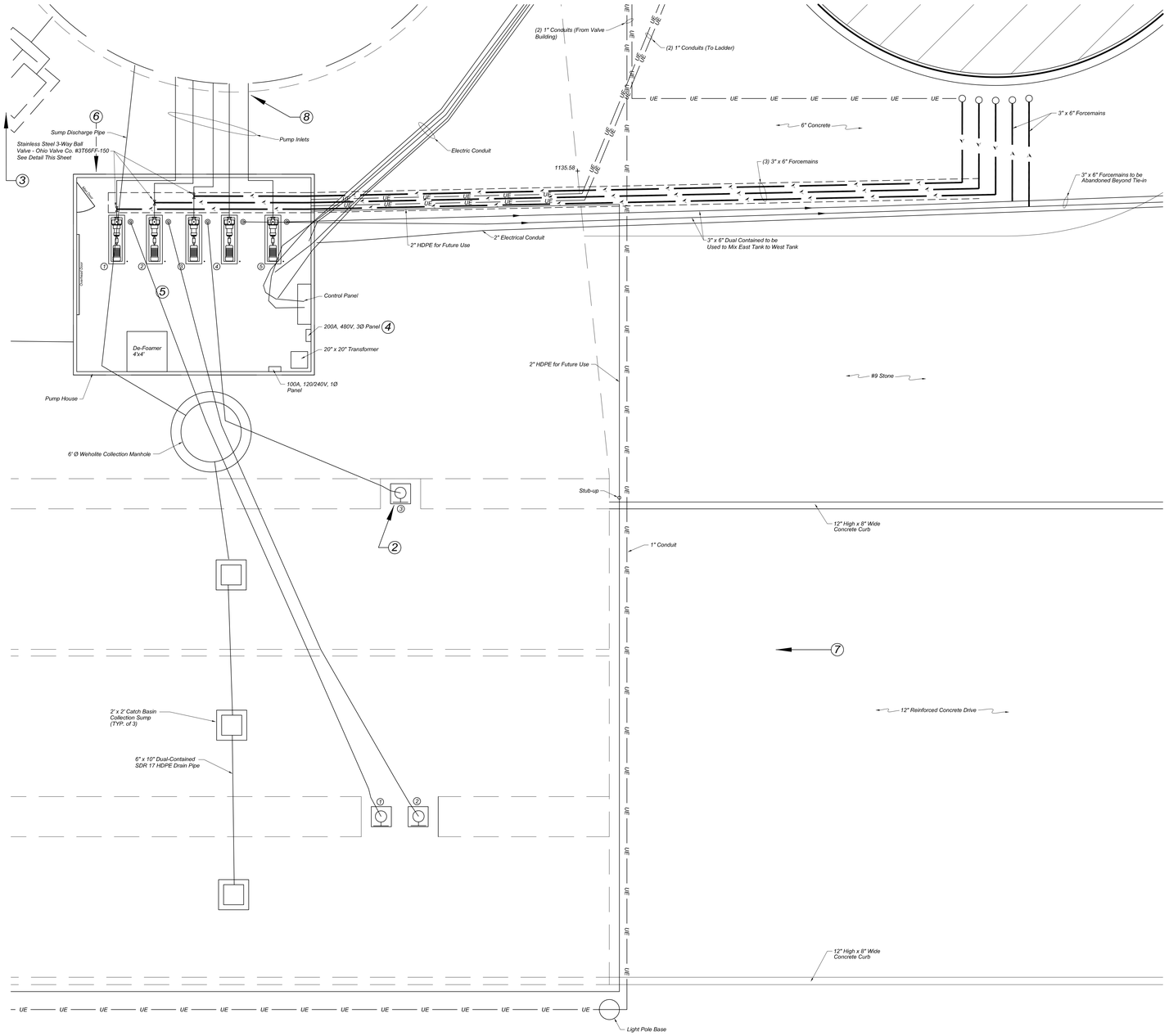
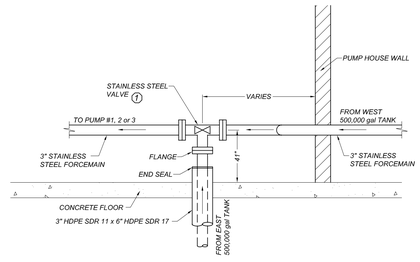
FIG. 3-19



500k TANKS - LOADOUT PAD PLAN VIEW

SCALE: 1" = 5'



ELEVATION VIEW

TYPICAL 3-WAY VALVE ASSEMBY AT PUMP INLET

DETAIL

SCALE: NOT TO SCALE

CODED NOTES:

1.) VALVES TO BE OHIO VALVE CO., 316 STAINLESS STEEL FULL PORT BALL VALVE, FLANGED ENDS & LOCKING HANDLE - PART #3T66F-150 (OR EQUAL).

NOTE:

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FIG. 3-20

APPENDIX A

Cell Floor Sump Operating Procedures

APPENDIX A

Cell Floor Sump Operating Procedures

Operation – Leachate from Cell 1 is gravity fed to the (Northern Area Lift Station) NALS outside the waste limits. Leachate removal from Cell 1 is passive and requires no operator assistance as long as the NALS is operational and gravity transmission lines do not become blocked. To ensure the leachate is properly being removed from Cell 1, an inspection port is provided to manually measure the leachate depth above the Cell 1 floor. Refer to the procedure described in the ***Inspection*** section below.

Leachate in the remaining cells is collected in a floor sump as shown on **Figure 3-3**. Each sump has a sump riser pipe which contains a pump for removing the leachate. Refer to **Figure 3-4** for as-built schematics of the side slope riser for each cell. The leachate is pumped through a forcemain, housed inside the riser, to the West 500k AST or intermediate lift station. Refer to **Table A.1 – Leachate Collection System Flow Logic** attached which presents the desired flow path from source to storage tank. The leachate level in these cells is measured with a redundant pair of pressure transducers which sends a signal to a liquid level controller that turns the leachate pumps on and off as the leachate level in the sump cycles. The level controllers are programmed to maintain the leachate level in the cell to be no greater than one foot above the cell floor liner elevation at the upper perimeter of the sump.

Refer to attached **Table A.2 – Sump Operations** for cell sump operating parameters and directions for starting up and shutting down each sump. Additional details for the following elements of the leachate collection system can be found as indicated below.

- Sump Inspection Procedure **Checklist A.1 – Routine Leachate System Checklist and Correction Form**.
- Sump Elect Controls **Figure A.1** and **Figure A.2**
- Pump Specifications **Table A.3**
- Transducer Specifications **Table A.4**
- Suggested Cell Sump Control Panel Parts Inventory **Table A.5**

The reference documents listed above are attached to this Appendix.

Manufacturer's literature and operating guide for the Grundfos pumps currently in use are provided in **Appendix D.**

Sump operating parameters and level control transducer set points are presented in **Table A.2**.

In normal daily operation, all cell leachate collection sump pumps are operated in automatic mode which is programmed to maintain less than 12 inches of leachate head above the cell floor liner at all times.

Operating Logic:

- When leachate in the sump rises to a level equal to the pump-on set point, the pump will start and send the leachate to its designated storage tank.
- When the leachate level in the sump lowers to its pump-off set point, the pump shuts off.
- This operation automatically repeats as the leachate level in the sump cycles from the pump-off elevation to the pump-on elevation.
- If there is a fault in the system and the leachate elevation in the sump rises above the pump-on set point, then a high alarm is activated to alert the operator to initiate corrective action.

APPENDIX A

Inspection – The Operator should endeavor to inspect the leachate system daily **(Ohio EPA requires recordings once a week)** and collect system operating recordings of leachate levels displayed by the level controllers. This practice will help to ensure the system functions properly, and to help confirm leachate trucking requirements. See attached form for **Checklist A.1 – Routine Leachate Checklist and Correction Form**.

To facilitate daily cell sump operating status, a light tower has been installed at each cell, sump, lift station, and permanent storage tank to provide every operator on the site with a visual system operating status. A schematic legend which describes the color code and corresponding fault/status description for a typical cell sump light tower is provided in attached **Table A.6**. A fault requiring operator attention is signaled by either the red or amber beacons being lighted or the absence of light in the upper "Power Available" green beacon. **Table A.6** provides a guide to help the operator diagnose faults indicated by the Light Tower display**. Checklist A.2 – Radio Control Interlock Test Procedures** attached provides the procedures for testing and documenting the functionality of the tank interlock control. Additional detail regarding the radio interlock can be found in **Appendix E**.

Special Procedure for Cell 1 - Confirm leachate levels in Cell 1 by inserting the dedicated dip stick (or suitable alternate) into the Inspection Port, located just south of the Cell 1 Valve Vault within the limits of waste. Leachate is required to be no more than one foot above the liner at this point. The Inspection Port location is shown on **Figure 3-3**.

Contingencies Related to the LCS Sumps – Atypical LCS operational challenges related to the reaction have caused leachate to be expressed from either the sideslope riser pipe access openings or LCS cleanouts and may have caused deformation of side slope riser pipes.

The following actions can alleviate this condition when it is observed:

- Valve off the GCCS connection to the riser pipe
- Mobilize a vacuum truck to remove the leachate from the pipe
- Increase the extraction rate at the nearest gas extraction wells
- Allow the gas pressure in the sump riser to equalize
- Re-establish vacuum at the sump riser GCCS connection

The risk of this occurrence will be reduced or eliminated by completion of the LCS upgrade construction which will remove connections which currently drain leachate back down the leachate riser pipes.

Elevated temperatures can reduce structural rigidity of the HDPE pipes from which the sideslope risers are constructed. This condition has been suspected of making removal and replacement of the sideslope riser pumps more challenging at times. This may be prevented or remediated by reinforcing the HDPE riser pipe with a steel pipe sleeve insert. This can be accomplished by constructing a special guide tip to wedge the HDPE pipe open again when forced into the riser.

The necessity for repairing a deformed riser pipe in this manner may be determined by difficulty removing or replacing a cell floor sump pump. If difficulty removing or replacing a pump is experienced, the riser pipe could be televised to confirm the location and nature of the potential deformation.

COUNTYWIDE RECYCLING AND DISPOSAL FACILITY

REPUBLIC SERVICES

3619 GRACEMONT STREET S.W.

EAST SPARTA, OHIO 44626

88-acre CELL FLOOR SUMPS ELECTRICAL CONTROLS

AECOM

330.916.6600

WWW.AECOM.COM

Rev	Date	Issued/Description

Designed:

Drawn: DCT 06/04/2009

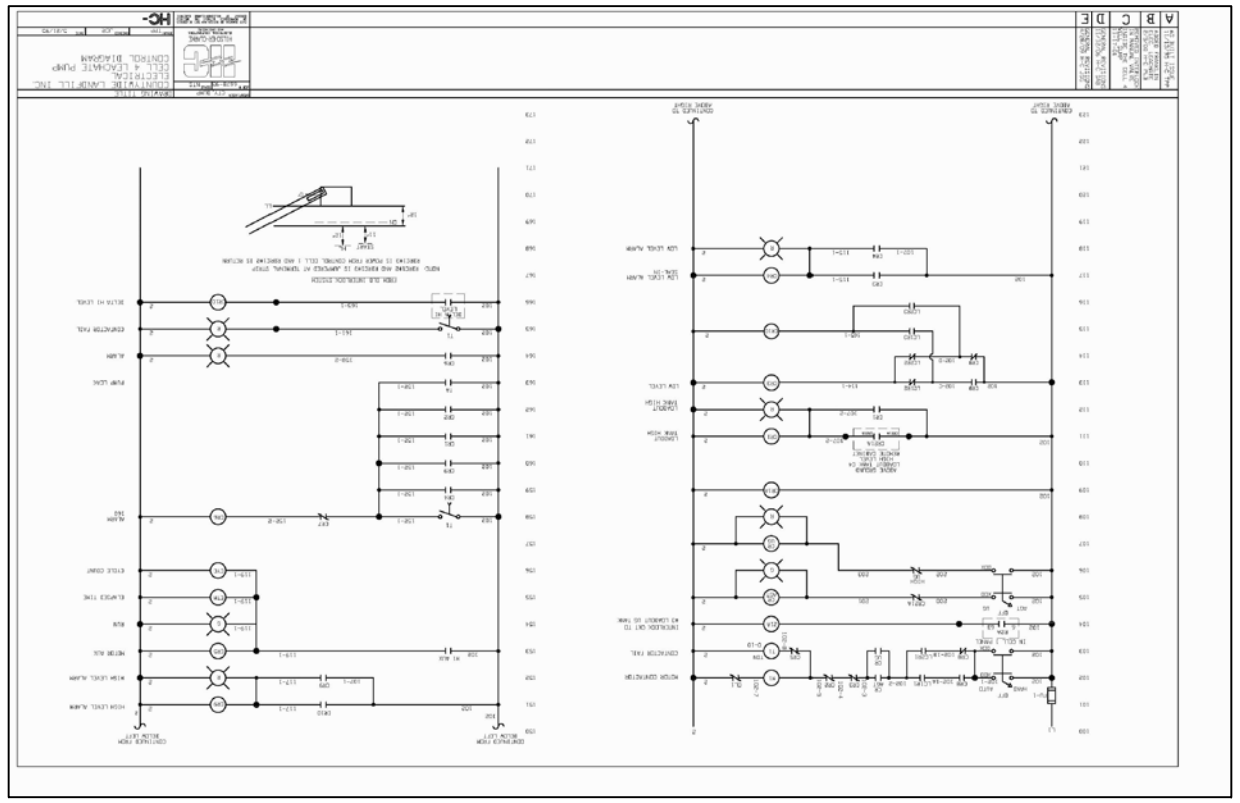
Checked: AMD 06/04/2009

Approved: CMD

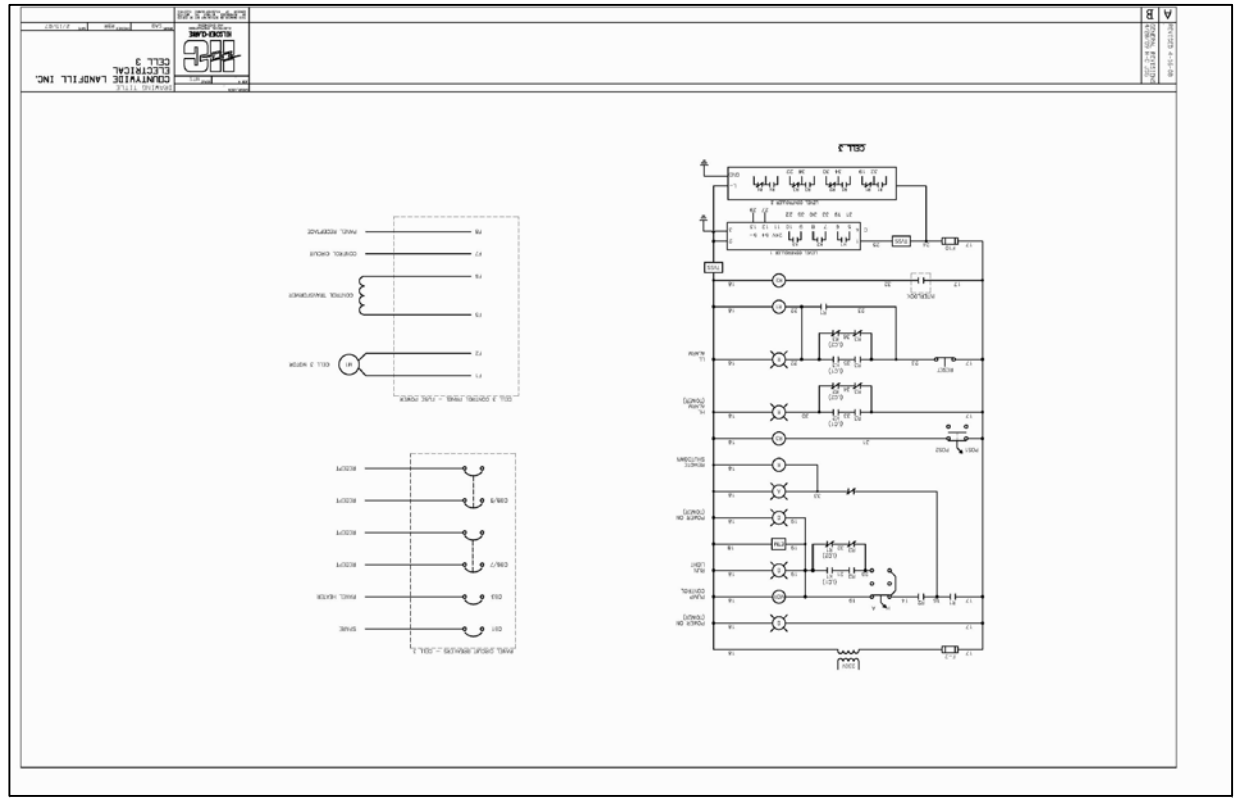
PROJECT NUMBER
103345

SHEET REFERENCE NUMBER
FIG. A-1

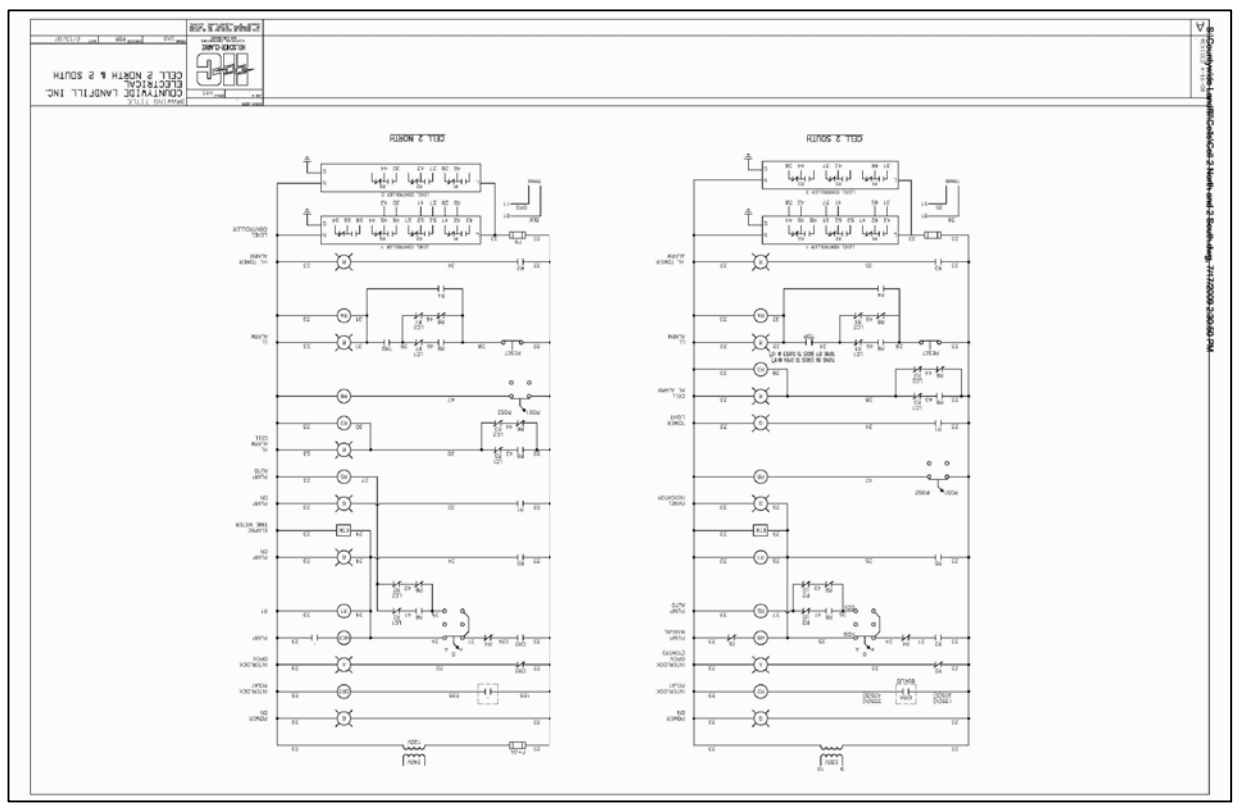
CELL 4

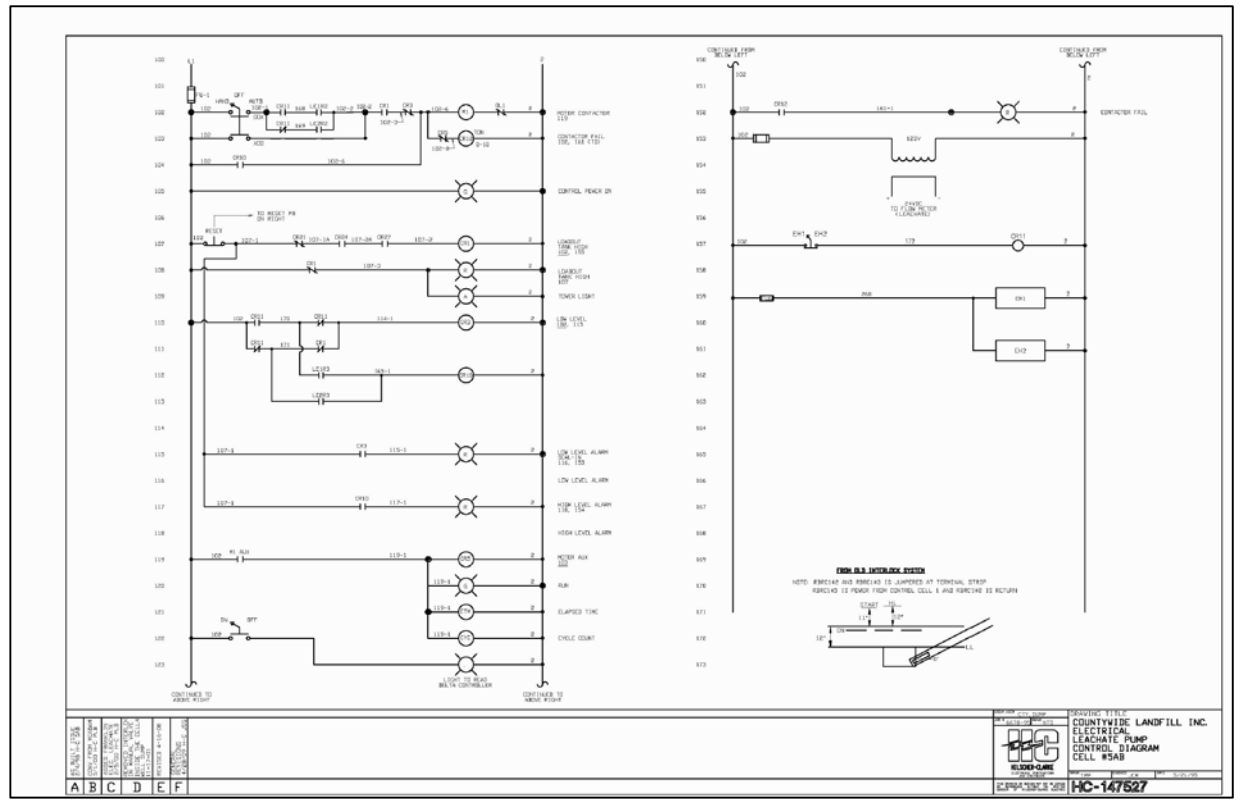


CELL 3

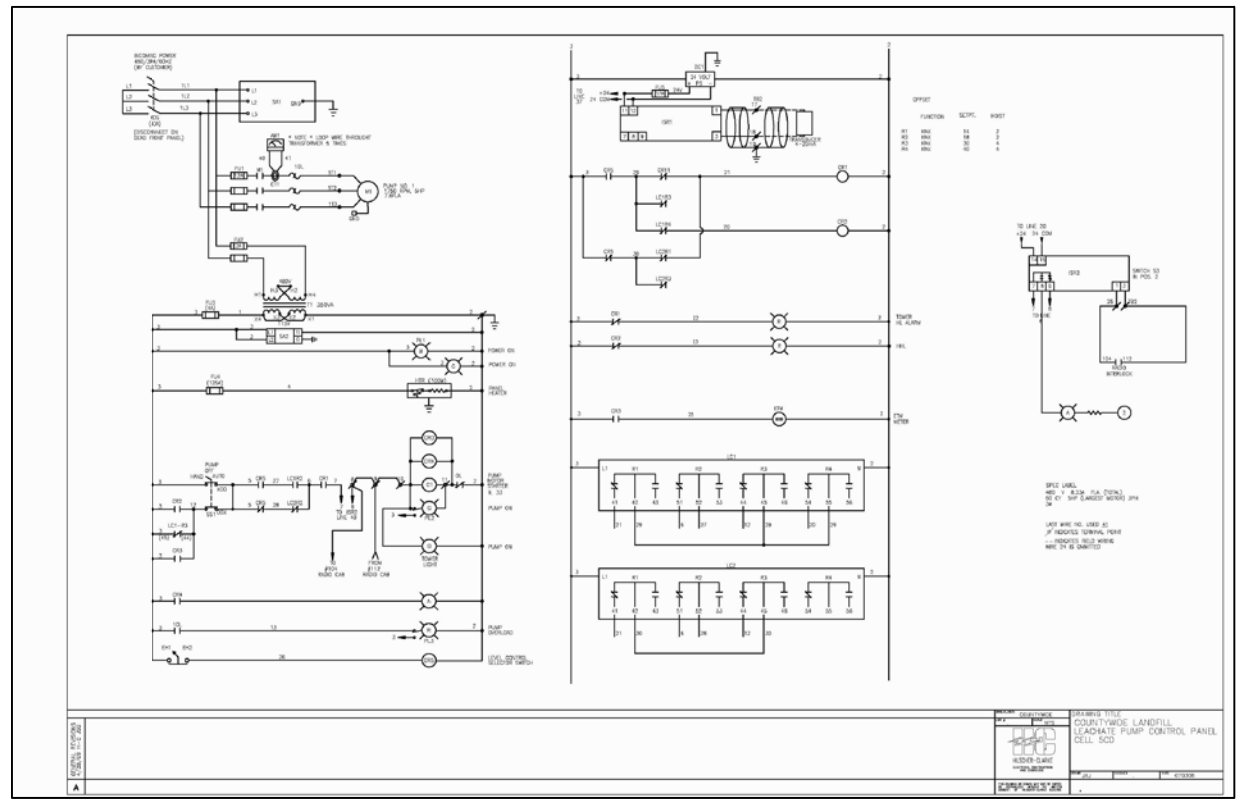


CELL 2N & 2S





CELL 5AB



CELL 5CD

AECOM

616.942.9600

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COUNTYWIDE RECYCLING AND DISPOSAL FACILITY
REPUBLIC SERVICES
3619 GRACEMONT STREET S.W.
EAST SPARTA, OHIO 44626
88-acre CELL FLOOR SUMPS ELECTRICAL CONTROLS

Issued

Rev	Date	Description

Designed:
Drawn: DCT 08/04/2009
Checked: AMC 08/04/2009
Approved: DAD

PROJECT NUMBER
103345

SHEET REFERENCE NUMBER

FIG. A-2

TABLE A.1
Countywide Landfill
Leachate Collection System Flow Logic

TABLE NOTES:
Interlock radio control is intended to interupt Cell sump pumps from pumping into either of the 500k AST to prevent overflow.
Because of gravity flow to the lift stations it has been decided that an overflow at the 500k AST's contained in the secondary containment dike is preferable to a release at the lift stations themselves. Therefore,there is no interlock control at the Lift stations or condensate sumps
Best practice dictates that the leachate level remains below the interlock.
Valving at the 500k tank valve building allows flow from cells to be directed into either 500k AST. Therefore, if one tank needs repair or is being cleaned, 100% of the flow can be switched to either tank.

Flow logic routing shown in this table is for normal operating conditions

Leachate Source	Pump Controlled by Remote Interlock				flow	Lift Station or Intermediate Structure - 1	Transmission By	Lift Station or Intermediate Structure - 2	Transmission By	Lift Station or Intermediate Structure - 3	Primary Storage Location	Secondary Storage Location (Requires Operator Valve Change)	Alternate Storage Location (Requires Operator Valve Change)	Passive Emergency Storage Location (No Pumps Running)	Active Emergency Overflow Protection (Pumps Running)
						Interlock					Interlock	Interlock	Interlock		
88 - acre remediation unit															
Cells															
Cell 1					gravity	MH # 5	G	NALS	F		500k West	500k East	NAST	[1]	
Cell 2 N					FM						500k West	500k East			
Cell 2 S					FM						500k West	500k East			
Cell 3					FM						500k West	500k East			
Cell 5 A/B					FM	S Valve Bldg	F				500k West	500k East	SAST		
Cell 5 C/D					FM	S Valve Bldg	F				500k West	500k East	SAST		
Cell 4					FM	NALS	F				500k West	500k East	NAST		
Cell 4					FM	NALS							NAST		
SW subcap drains					gravity	SWLS	F	S Valve Bldg	F		500k West	500k East	SAST	[2]	[3]
NW subcap drains					gravity	NWLS	G	SWLS	F	S Valve Bldg	500k West	500k East	SAST	[2]	[3]
N subcap drains					gravity	NALS	F				500k West	500k East		[1]	[3]
SE subcap drains					gravity	NALS	F				500k West	500k East		[1]	[3]
S subcap drains					gravity	NALS	F				500k West	500k East	SAST	[2]	[3]
NW Toe Drains					gravity	NWLS	G	SWLS		S Valve Bldg	500k West	500k East		[2]	[3]
SW Toe Drains					gravity	SWLS	F	S Valve Bldg	F		500k West	500k East		[2]	[3]
S Toe Drains					gravity	NALS	F		F		500k West	500k East	SAST	[2]	[3]
SE Toe Drains					gravity	NALS	F				500k West	500k East		[1]	
N Toe Drains					gravity	NALS	F				500k West	500k East		[1]	
DT Drain					gravity	NALS	F				500k West	500k East		[1]	
E Buttress TD					gravity	East Sump	F				500k West	500k East		[1]	
S EGEW					gravity	SWLS	G	S Valve Bldg	F		500k West	500k East			
N EGEW					gravity	NALS	G				500k West	500k East			
W EGEW					gravity	NWLS	G	SWLS	F	S Valve Bldg	500k West	500k East			
E EGEW					gravity	NALS	F				500k West	500k East			
N Flare Cond					gravity	NALS	F				500k West	500k East			
S Flare Cond					gravity	SWLS	F	S Valve Bldg	F		500k West	500k East			
NWLS					FM	SWLS	F	S Valve Bldg	F		500k West	500k East		[2]	[3]
SWLS					FM	S Valve Bldg	F				500k West	500k East		[2]	[3]
NALS					FM						500k West	500k East		[1]	[3]

Pump Deactivated if 500k West high alarm interlock control is activated
Pump Deactivated if 500k East high alarm interlock control is activated

G Gravity Flow
F Forcemain Flow

TABLE NOTES:
[1] Gravity overflow into NALS secondary containment compound
[2] Gravity overflow into SWLS Emergency E Tanks
[3] Pumped to 500k AST and overflow tanks into secondary containment compound

TABLE A.2
Countywide Landfill
Sump Operations

Transducer Settings[4]							Sump Operating Procedures				
Cell ID[5]	Smp depth[1] (inches)	Low level alarm[2] (inches)	Pump off[2] (inches)	Pump on[2] (inches)	High level alarm[2] (inches)	Compliance Depth[3] (inches)	Compliance Verification Procedure[4,5]	Power[6]	Normal Operating Control Setting	Normal Operating Valve Setting[5]	Receiving Tank
1	N/A	NA	NA	NA	NA	12	Leachate level in the cell is measured by inserting a dip stick into the inspection pipe located just south of the manual valve in the limits of waste. Leachate is required to be no more than one foot above the liner at this	NA Gravity Drain	NA Gravity Drain	1 Open manual valve located between cell 1 and Manhole 1. This a 90 degree actuated valve. The tee handle should be aligned so it points up and down the slope when open.	1 NALS
2N	18	N/A	10	27	30	30	Two liquid level controllers each with their own transducer mounted on the pump displays the leachate level in the sump, a selector switch selects which controller is to be used (use the higher of the two readings)	1 Main power to control panel is located on pole southeast of the EUST control room. 100 Amp Service Panel is located inside. 2 Verify that Power Available green light is lit on light tower. 3 Verify that 500k AST - West interlock is open (amber light tower not lit).	1 Set selector switch to level controller showing greatest liquid depth.	1 Valve located in the 500k valve building Open V 14 and Close V 13 2 Valve located in the 500k valve building Open V 13 and Close V 14	1 West 500k AST (Preferred) 2 East 500k AST
2S	18	N/A	10	27	30	30	Two liquid level controllers each with their own transducer mounted on the pump displays the leachate level in the sump, a selector switch selects which controller is to be used (use the higher of the two readings)	1 Main power to control panel is located on pole southeast of the EUST control room. 100 Amp Service Panel is located inside. 2 Verify that Power Available green light is lit on light tower. 3 Verify that 500k AST - West interlock is open (amber light tower not lit).	1 Set selector switch to level controller showing greatest liquid depth.	1 Valve located in the 500k valve building Open V 14 and Close V 13 2 Valve located in the 500k valve building Open V 13 and Close V 14	1 West 500k AST (Preferred) 2 East 500k AST
3	14.5"	N/A	10"	25"	26	26.5	Two liquid level controllers each with their own transducer mounted on the pump displays the leachate level in the sump, a selector switch selects which controller is to be used (use the higher of the two readings)	1 Main power to control panel is located in the outdoor power panel approx 300' to the Southeast mounted on the power line pole next to Beaver Excavating office trailer. 2 Verify that Power Available green light is lit on light tower. 3 Verify that 500k AST - West interlock is open (amber light tower not lit).	1 Set selector switch to level controller showing greatest liquid depth.	1 Valve located in the 500k valve building Open V 8 and Close V 7 2 Valve located in the 500k valve building Open V 7 and Close V 8	1 West 500k AST (Preferred) 2 East 500k AST
4	24"	N/A	12"	34"	36	36	Two liquid level controllers each with their own transducer mounted on the pump displays the leachate level in the sump, a selector switch selects which controller is to be used (use the higher of the two readings)	1 Main power to control panel is located on pole due East of cell 1 control room. 100 amp service panel is located inside cell 1 control room 2 Verify that Power Available green light is lit on light tower. 3 Verify that 500k AST - West interlock is open (amber light tower not lit).	1 Set selector switch to level controller showing greatest liquid depth.	1 No valve but the discharge line may be connected to either the NALS gravity line or a forcemain to the NAST. Desired flow is to the NALS with the NAST forcemain capped off inside the riser can. See detail 3/12 sheet 3-5 2 Valve located in the 500k valve building Open V 10 and V 12 and Close V 9 and V 11 3 Valve located in the 500k valve building Open V 9 and V 11 and Close V 10 and V 12	1 NALS 2 West 500k AST (Preferred) 3 East 500k AST 4 NAST
5 A/B and 6	25.2"	N/A	12"	35"	37	37.2	Two liquid level controllers each with their own transducer mounted on the pump displays the leachate level in the sump, a selector switch selects which controller is to be used (use the higher of the two readings)	1 Main power to control panel is located in power panel at the SAST control box. 2 Verify that Power Available green light is lit on light tower. 3 Verify that 500k AST - West interlock is open (amber light tower not lit).	Set selector switch to level controller showing greatest liquid depth.	1 Valves in the SAST valve building:V1 to SAST, V2 to forcemain 2, V3 to forcemain 1 where FM 1 and 2 both go to the 500k AST 2 Valve located in the 500k valve building Open V 2 and V 4 and Close V 1 and V 3 3 Valve located in the 500k valve building Open V 1 and V 3 and Close V 2 and V 4	1 West 500k AST (Preferred) 2 West 500k AST (Preferred) 3 East 500k AST
5 C/D	25.2"	12"	12"	35"	37	37.2	Two liquid level controllers each with their own transducer mounted on the pump displays the leachate level in the sump, a selector switch selects which controller is to be used (use the higher of the two readings)	1 Main power to control panel is located in power panel at the SAST control box. 2 Verify that Power Available green light is lit on light tower. 3 Verify that 500k AST - West interlock is open (amber light tower not lit).	Set selector switch to level controller showing greatest liquid depth.	1 Valves in the SAST valve building:V4 to SAST, V6 to forcemain 2, V5 to forcemain 1 where FM 1 and 2 both go to the 500k AST 2 Valve located in the 500k valve building Open V 2 and V 4 and Close V 1 and V 3 3 Valve located in the 500k valve building Open V 1 and V 3 and Close V 2 and V 4	1 West 500k AST (Preferred) 2 West 500k AST (Preferred) 3 East 500k AST

[1] Measured from the FML at the base of the sump to the cell floor FML at the perimeter of the sump
[2] Measured up from the FML at the base of the sump
[3] Measured up from the FML at the base of the sump to an elevation 12 inches above the cell floor FML
[4] Refer to Figure 3-4 for profile details for each sump
[5] An alternate manual method of verifying the leachate level is provided on Figure 3-4.
[6] Refer to Figure 3-3 for sump locations and [Revise Drawing to show power source and control valve locations after construction]

TABLE A.3
Countywide Landfill
Pump Specifications and Inventory Control Tool

UNIT	PUMP	MOTOR	Est. GPM to 500k Tank	DELIVERY DATE	Ordered	Delivered	Pumps in Stock	Motors In Stock	Outstanding	Rebuilt Parts Motor/Pump	In-Service Date	Hours@ Install
1	Grundfos 40S20-7	2 hp,230v, 1 Phase	54									
2S	Grundfos 40S15-5	1.5 hp,230v,1 Phase	50									
2N	Grundfos 40S15-5	1.5 hp,230v,1 Phase	50									
Cell 3	Grundfos 40S15-5	1.5 hp,230v,1 Phase	54									
Cell 4	Grundfos 60S50-7	5hp, 230v,1 Phase	60									
Cell 5 A/B	Grundfos 60S50-7	5hp, 480v, 3 Phase	63									
Cell 5 C/D	Grundfos 60S50-7	5hp, 480v, 3 Phase	63									
SAST	Goulds 6SH4J52A5	480v, 3 Phase										
NAST	Goulds 6SH4J52A5	230v, 1 Phase										
E/Sump	Stancor ss100 2	1.0hp, 230v, 1 Phase	100									
Cell 5 A/B	Crane 9-55134-03X	5hp, 480v, 3 Phase										
Cell 5C/D	Stancor P40CHH (nickel coating)	5hp, 480v, 3 Phase										
Cell 4	Stancor P40CHH (nickel coating)	5hp, 230v, 1 Phase										
500K Tank	Stancor SS300	3hp,460v,3phase	125									
500K Tank	Goulds 22SH2J52A	5hp,460v,3phase	300									
Misc	Power Lead											
	Franklin motor starters											
Cell 1	P/N 282 3018 110	2hp, 230v, 1 Phase										
Cell 2S	P/N 282 3008 110	1.5hp, 230v, 1 Phase										
Cell 2N	P/N 282 3008 110	1.5hp, 230v, 1 Phase										
Cell 3	P/N 282 3008 110	1.5hp, 230v, 1 Phase										
Cell 4	P/N 282 1138 110	5hp, 230v, 1 Phase										

Optional pumps to remove solids

Pumps removed from service or to be removed

NOTE: Equipment models, part numbers, and specifications contained in this table are intended for reference. Actual equipment may vary.

TABLE A.4
Countywide Landfill
Transducer Specifications and Inventory Control

CELL #	Riser Length (ft)	Transducer Style	Cable length	ON ORDER	No. Received	Date Received	In Stock	Outstanding	Date Installed	No. Used
1	28'	0-138" 4-20 mA	50'							
2S	66'	0-138" 4-20 mA	100'							
2N	47'	0-138" 4-20 mA	100'							
3	154'	0-138" 4-20 mA	175'							
4	204'	0-138" 4-20 mA	275'							
5 C/D	250'	0-138" 4-20 mA	275'							
5 A/B	300'	0-138" 4-20 mA	350'							
8b	480'	0-138" 4-20 mA	500'							
500k	32'	0-15 psi	100'							

NOTE: Equipment models, part numbers, and specifications contained in this table are intended for reference. Actual equipment may vary.

TABLE A.5
Countywide Landfill
Suggested Pump Control Panel Spare Parts Inventory

Date: _____

Item	Part Number	Suggested Quantity
Control fuse	ATDR 1/2 600V	10
Control fuse	ATDR 1 600V	10
Control fuse	ATDR 2 600V	10
Control fuse	ATDR 3 600V	10
Control fuse	ATDR 4 600V	10
Control fuse	ATDR 5 600V	20
Control fuse	ATDR 10 600V	20
Control fuse	ATDR 15 600V	20
Control fuse	ATDR 20 600V	20
Control fuse	ATDR 30 600V	20
Power fuse	TR10R 250V	6
Power fuse	TR15R 250V	6
Power fuse	TR20R 250V	6
Power fuse	FLNR 5 250V	6
Power fuse	TRS20R 480V	6
Power fuse	TRS30R 480V	6
Power fuse	TRS60R 480V	6
Power fuse	TRS100R 480V	6
Power fuse	TRS125R 480V	3
Power fuse	TRS150R 480V	3
Power fuse	TRS200R 480V	3
Power fuse	TRS400R 480V	3
Liquid level controller	Endres+Hauser RIA452	6
Floats	Flyght ENM-10	6
Light bulb	60w incandescent lamps	12
Light bulb	100w incandescent lamps	12
GFCI receptical		6
Allen Bradley 8-pin base	700-HN100	4
Allen Bradley 12-pin base	700-HN101	4
Allen Bradley 8-pin relay	700-HA32A1	10
Allen Bradley 12-pin relay	700-HA33A1	6
Allen Bradley motor starter	100 C16D10	3
Allen Bradley motor overload	193-EEDB	3

NOTE: Equipment models, part numbers, and specifications contained in this table are intended for reference. Actual equipment may vary.

TABLE A.6
Countywide Landfill
Sump Fault Diagnostic Guide

Beacon Light Sequence	Function Status Description When Lighted	Appropriate Operator Response
OFF	POWER AVAILABLE	1. Check control operator is in auto mode
ON	HIGH LIQUID LEVEL IN CELL	2. Check Light bulb in "Power Available" beacon. Replace if necessary.
	PUMP RUNNING	3. Check liquid level controller, turn pump on "hand" to check operation by confirming Pump Running beacon
	STORAGE TANK INTERLOCK OPEN	4. Pull and replace pump if necessary.
ON	POWER AVAILABLE	1. Wait a few minutes to allow pump to lower the leachate level in the sump.
ON	HIGH LIQUID LEVEL IN CELL	2. Check history. If pump run continuous for extended duration, check pump seals.
ON	PUMP RUNNING	3. Check flow rate for low or no flow
	STORAGE TANK INTERLOCK OPEN	4. Pull pump and check for plugged inlet
ON	POWER AVAILABLE	1. Check storage tank. If full, schedule immediate tank unloading.
ON	HIGH LIQUID LEVEL IN CELL	2. If tank not full, investigate.
	PUMP RUNNING	
ON	STORAGE TANK INTERLOCK OPEN	
ON	POWER AVAILABLE	1. Check for proper interlock function.
ON	HIGH LIQUID LEVEL IN CELL	
OFF	PUMP RUNNING	
ON	STORAGE TANK INTERLOCK OPEN	
OFF	POWER AVAILABLE	1. Check circuit breaker, blown panel fuses or power outage.
OFF	HIGH LIQUID LEVEL IN CELL	
OFF	PUMP RUNNING	
OFF	STORAGE TANK INTERLOCK OPEN	

CHECKLIST A.1
Countywide Landfill
Routine Leachate System Checklist and Correction Form

DATE:
Inspected By:

System Identification	Time	Hour Meter	Level Meter #1 Reading	Level Meter #2 Reading	Pump Operable	Controller Selected	Leaks or Spills	Alarm Condition "X" all lit beacons	Flow Valved To?: "X" W500	E500	NAST	SAST	SWLS	NWLS	NALS	Comments
Cell 1		N/A	Cell Level _____		N/A	N/A	Yes ☐ No ☐									
Cell 2N					Yes ☐ No ☐	#1 ☐ #2 ☐	Yes ☐ No ☐									
Cell 2S					Yes ☐ No ☐	#1 ☐ #2 ☐	Yes ☐ No ☐									
Cell 3					Yes ☐ No ☐	#1 ☐ #2 ☐	Yes ☐ No ☐									
Cell 4					Yes ☐ No ☐	#1 ☐ #2 ☐	Yes ☐ No ☐									
Cell 5 A/B					Yes ☐ No ☐	#1 ☐ #2 ☐	Yes ☐ No ☐									
Cell 5 C/D					Yes ☐ No ☐	#1 ☐ #2 ☐	Yes ☐ No ☐									
SW. Lift Station.				Pump 1	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
				Pump 2	Yes ☐ No ☐											
N. Area Lift Station				Pump 1	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
				Pump 2	Yes ☐ No ☐											
NW. Lift Station.				N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
East Sump #1			N/A	N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
East Sump #2			N/A	N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
East 500k AST				N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
Transfer pump 4			N/A	N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
Spare pump 5			N/A	N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
Aeration Blow 1			N/A	N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
Aeration Blow 2			N/A	N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
West 500k AST				N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
Loadout pump 1			N/A	N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
Loadout pump 2			N/A	N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
Loadout pump 3			N/A	N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
Aeration Blow 1			N/A	N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
Aeration Blow 2			N/A	N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
NAST				N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
SAST				N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
SWLS Generator			N/A	N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
NALS Generator			N/A	N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
NWLS Generator																
Cell 7					Yes ☐ No ☐	#1 ☐ #2 ☐	Yes ☐ No ☐									
Cell 8					Yes ☐ No ☐	#1 ☐ #2 ☐	Yes ☐ No ☐									
Cell 8 B				N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									
Cell 16				N/A	Yes ☐ No ☐	N/A	Yes ☐ No ☐									

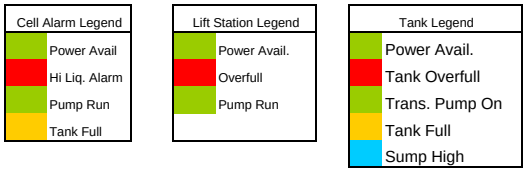
Any changes to the flow valves should be recorded. Complete **Checklist ___- Valve Verification Form** Located in **Appendix ____**

If pump or other system is noted to be malfunctioning, note observation in "Comments" section

Controller with the higher level should be selected and if either one has a faulty reading contact Jim Steigerwald.

Any leak, spill or alarm condition contact Jim Steigerwald at the Main office

Corrections made to any malfunction noted on this page must be recorded on the back side of this form



CHECKLIST A.1
Countywide Landfill
Routine Leachate System Checklist and Correction Form

DATE:
Inspected By:

System Identification	Corrections made to anything noted on page 1
Cell 1	
Cell 2N	
Cell 2S	
Cell 3	
Cell 4	
Cell 5 A/B	
Cell 5 C/D	
SW. Lift Station.	
N. Area Lift Station	
NW. Lift Station.	
East Sump #1	
East Sump #2	
East 500k AST	
Transfer pump 4	
Spare pump 5	
Aeration Blow 1	
Aeration Blow 2	
West 500k AST	
Loadout pump 1	
Loadout pump 2	
Loadout pump 3	
Aeration Blow 1	
Aeration Blow 2	
NAST	
SAST	
SWLS Generator	
NALS Generator	
NWLS Generator	
Cell 7	
Cell 8	
Cell 8 B	
Cell 16	

CHECKLIST A.2
Countywide Landfill
Radio Control Interlock Test Procedures

Date:
Preformed by:

CELL	East 500k AST High limit	East 500k AST Hi-Hi limit	West 500k AST High limit	West 500k AST Hi-Hi limit	NALS	Comments
2 North	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		
2 South	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		
3	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		
4	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	
5 A/B	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		
5 C/D	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		
7	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		
8A	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		
8B	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		
16	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		

INTERLOCK FUNCTION TEST PROCEDURE

Requirement: Two Operators with radio or cell phone communication

Procedure: Operator 1 stands at sliding scale level indicator on designated tank. Operator 2 stands at cell sump control panel and establishes communication with Operator 1. Operator 1 manually trips and holds the tank full limit switch lever (upper) and notifies Operator 2. Operator 2 confirms that the tank full amber beacon lights and pump deactivates as determined audibly by the pump starter breaking contact and green Pump Run beacon goes off. Operator 2 confirms pump will not run by switching pump control to Hand mode and listening for pump starter to contact. Operator 2 returns the pump control switch to Auto and notifies Operator 1 that test is complete. This procedure is repeated for the Hi-Hi limit switch except Operator 1 manually trips the Hi-Hi Limit switch lever (lower) and after Operator 2 concludes the test, Operator 1 manually resets the Hi-Hi limit Alarm on the main control panel located in the 500k AST pump house building.

Procedure for Cell 4: Operator 1 opens hatch to NALS wel well. Using a long handle hook, Operator 1 hooks and lifts the upper most float switch to mimic a high water level. Operator 1 confirms that the Red Overfull beacon lights and notifies Operator 2. Operator 2 standing at the Cell 4 sump control panel confirms that the amber Tank Full beacon comes on and the pump deactivates as determined audibly by the pump starter breaking contact and green Pump Run light goes off. Operator 2 confirms pump will not run by switching pump control to Hand mode and listening for pump starter to contact. Operator 2 returns the pump control switch to Auto and notifies Operator 1 that test is complete. Operator 1 releases the float switch and closes the hatch doors.

APPENDIX B

Leachate Collection Drain Inspection and Operating Procedures

APPENDIX B

Leachate Collection Drains Inspection and Operating Procedures

The term subcap drains refer to the combined Undercap Collectors (UCC), LFG and Leachate Collectors (LLC) Toe Drain Collectors (TD), and Deep Trench Drain (DTD) drainage systems.

Figure 3-2, Figure 3-7, Figure 3-8, **Figure 3-9,** and **Figure 3-10** provide the location of the systems, the line identifications, and construction details.

Operation – The subcap drainage system is completely passive (requires no operator assistance or attention) until the liquid arrives at the pumping structures or storage tanks. Operation of this part of the system requires monitoring the storage tanks or sumps and ensuring adequate trucking is available to haul leachate to an approved wastewater treatment facility (WWTF). This monitoring will be performed routinely (at least once per week), similar to other leachate collection and storage components in use elsewhere at the facility. Refer to Routine **Leachate Checklist** and **Correction Form** located in **Appendix A**.

The operator must be particularly vigilant during periods when synthetic cap repairs are needed or underway, because the subcap drains can collect significant volumes of rain water during a storm event if a breach in the cap is present. Subcap drains exposed to rainfall should be covered with temporary tarps or FML panels, and surface drainage should be diverted away from the breach in the FML cap as much as practical.

Inspection – Inspect the subcap collection drains according to the procedures provided in the attached **Table B.1 – Subcap Drains Inspection Routine**. Use **Figure B.1 – Subcap Drain Inspection Routine** for documenting the inspection procedure as described in **Table B.1**. Attached **Table B.2 – Subcap Leachate Collection System Pipe Inventory** provides additional information for each run of pipe.

Expansion – While the subcap collection drain will eventually be installed over the majority of the 88-acres as temporary cap is installed, the necessity to expand the existing extent of the drain at an accelerated schedule will be determined by the following conditions:

- Persistent leachate outbreaks at the perimeter toe of slope that can not be managed routinely with maintenance and minor repair; and/or
- Leachate pooling beneath the FML cap at the toe of slope that can not be managed routinely with maintenance and minor repair.

Maintenance – Maintenance is described in **Appendix J – Leachate Collection Pipe Maintenance Procedures**.

riser Pipes

NORTHWEST LIFT STATION (NWLS)

NAST

NORTHERN AREA LIFT STATION (NALS)

Undercap Collector

Leachate Collection Pipe

DEEP TRENCH DRAIN

88-ACRE REMEDIATION UNIT

CELL #7

CELL #5C

CELL #5B

CELL #4

CELL #1

CELL #5A

CELL #6A

CELL #3

CELL #6D

CELL #2

SAST

Toe Collector Drain

SOUTHWEST LIFT STATION (SWLS)

88 - ACRE STORAGE TANK (500,000 GAL) WEST 500k AST

SHIPPED TO OFFSITE TREATMENT IN TANKER TRUCKS

170 - ACRE STORAGE TANK (500,000 GAL) EAST 500k AST

88 ACRE TRANSMISSION SYSTEM

LEACHATE COLLECTION SYSTEM

170 ACRE TRANSMISSION SYSTEM

TOE COLLECTOR SYSTEM

SUBCAP COLLECTION SYSTEM

LFG & LEACHATE COLLECTOR

LEGEND

- PERMANENT BELOW GROUND DUAL CONTAINED LEACHATE FM
- GRAVITY FLOW - DUAL CONTAINED LEACHATE COLLECTION HEADER
- CLEANOUT
- LIMIT OF SOLID WASTE
- CELL BOUNDARY
- CONTOURS
- ROADS
- LFG & LEACHATE COLLECTOR
- UNDERCAP COLLECTOR
- LEACHATE COLLECTION PIPE (CELL FLOOR)
- TOE COLLECTOR (CELLS 1, 2 & 3)
- LFG & LEACHATE COLLECTOR (CELLS 1, 2 & 3)
- DOWNSLOPE LEACHATE HEADER PIPE (CELLS 1, 2 & 3)
- UNDERCAP COLLECTOR (CELLS 1, 2 & 3)
- LIMITS OF 170 ACRE OPERATION UNIT
- LIMITS OF 88 ACRE REMEDIATION UNIT

Not to Scale

NOTE:
FOR DETAILED CONSTRUCTION INFORMATION SEE "LEACHATE SYSTEM IMPROVEMENTS" DRAWINGS PREPARED BY DIVERSIFIED ENGINEERING INC.

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COUNTYWIDE RECYCLING AND DISPOSAL FACILITY
REPUBLIC SERVICES
3619 GRACEMONT STREET S.W.
EAST SPARTA, OHIO 44626
SUBCAP DRAIN INSPECTION ROUTINE

Issued

Rev	Date	Description

Designed:
Drawn: DCT 08/04/2009
Checked: AMC 08/04/2009
Approved: DAD

PROJECT NUMBER
103345

SHEET REFERENCE NUMBER
FIG. B.1

TABLE B.1

Countywide Landfill
Subcap Collection Drains – Inspection Routine

Inspection	Resource	Procedure	Frequency
Visual	Well Field Technician	Walk the length of the subcap collection drain (LLC and UCC). Observe and document evidence of differential cap subsidence which could deter proper gravity drainage	Weekly
Penetrations	Well Field Technician	Inspect subcap collection drain (LLC and UCC) penetration boots for integrity	Weekly
Leachate Toe Drains (TD) – Inspection Routine			
Visual	Well Field Technician	Walk the length of the leachate TD. Observe and document occurrence of ponding water, bulging at the toe of the slope, leachate breakouts	Weekly
Penetrations	Well Field Technician	Inspect TD penetration boots for integrity	Weekly
Expansion	Well Field Technician	Walk the length of the perimeter toe where the TD is not currently constructed. Observe and document occurrence of ponding water, bulging at the toe of the slope, leachate breakouts	Weekly
Deep Trench Drain (DTD) – Inspection Routine			
Visual	Well field Technician	Walk the length of the DTD. Observe and document occurrence of ponding water, bulging at the toe of the slope, leachate breakouts	Weekly
Penetrations	Well field Technician	Inspect DTD penetration boots for integrity	Weekly
Expansion	Well field Technician	Walk the length of the access road drainage ditch where the DTD is not currently constructed. Observe and document occurrence of ponding water, bulging at the toe of the slope, leachate breakouts	Weekly

Note: Document the inspections on **Figure B.1 – Subcap Drain Inspection Routine** by highlighting areas inspected with a yellow highlighter and noting areas of concern with an ink pen. **Figure B.1** is attached.

These inspections may be performed in combination or in part with cap integrity inspections and well field monitoring activities. Monthly Inspection Checklist documentation may be compiled from field notes obtained during daily well field monitoring activities.

TABLE B.2
Countywide Landfill
Subcap Leachate Collection System Pipe Inventory

Updated July 13, 2009

Slope Location	Pipe Name:	Pipe Length (Ft.)	Pipe Diameter:	Pipe Type:	Plan Grid Location:	Number of Cleanouts	Receiving Structure
S	TD-1	755.00	4"	HDPE or PVC	C2, C1, D1 D2, E2	0	SWLS
S	TD-2	1,090.20	4"	HDPE or PVC	C2, C1, D1 D2, E2	1	SWLS
S	TD-3	197.50	4"	HDPE or PVC	C2, C1,D1	0	SWLS
S	TD-4	414.00	6"	HDPE or PVC	C2, D2	0	SWLS
S	TD-5	946.90	4" or 6"	HDPE or PVC	C2, D2, E2	0	SWLS
S	TD-5-1	217.90	4" or 6"	HDPE or PVC	C2	0	SWLS
S	TD-5-2	215.20	4" or 6"	HDPE or PVC	C2	0	SWLS
S	TD-5-3	195.20	4" or 6"	HDPE or PVC	D2	0	SWLS
S	TD-5-4	189.30	4" or 6"	HDPE or PVC	D2	0	SWLS
S	TD-5-5	181.60	4" or 6"	HDPE or PVC	D2	0	SWLS
S	TD-5-6	165.70	4" or 6"	HDPE or PVC	D2	0	SWLS
S	TD-5-7	166.00	4" or 6"	HDPE or PVC	D2	0	SWLS
S	TD-5-8	178.80	4" or 6"	HDPE or PVC	D2	0	SWLS
S	TD-5-9	178.50	4" or 6"	HDPE or PVC	D2	0	SWLS
S	TD-5-10	114.70	4" or 6"	HDPE or PVC	E2	0	SWLS
S	TD-6	381.10	6"	HDPE or PVC	B2, C2	1	SWLS
S	TD-7	285.10	6"	HDPE or PVC	C2, D2	0	SWLS
S	TD-8	141.10	6"	HDPE or PVC	C2, D2	0	SWLS
S	TD-9	438.20	4" or 6"	HDPE or PVC	C2, D2	0	SWLS
S	TD-10	253.60	6'	HDPE or PVC	C2	0	SWLS
S	TD-11	275.10	4"	HDPE or PVC	D1, E1, E2	0	SWLS
NE	TD-12	1,399.00	4"	HDPE or PVC	D3, E3, E4, D4	0	NALS
NE	TD-13	293.00	4" or 6"	HDPE or PVC	E3, F3	0	NALS
	TD TOTAL FOOTAGE =		8,672.70				
SW	LLC-1	359.90	6"	CPVC	B2, C2	1	SWLS
SW	LLC-2	563.80	6"	CPVC	B2, C2	1	SWLS
SW	LLC-3	606.40	6"	CPVC	B2, C2	1	SWLS
S	LLC-4	418.70	6"	CPVC	B2	0	SWLS
W	LLC-5	552.10	6"	CPVC	B3, B2	1	SWLS
W	LLC-6	715.30	6"	CPVC	B3, B2	1	SWLS
W	LLC-7	1,342.40	6"	CPVC	B4, B3, B2	2	SWLS
W	LLC-8	878.00	6"	CPVC	B3, B2	1	SWLS
NW	LLC-9	381.30	6"	CPVC	B4, B3	1	NWLS
NW	LLC-10	438.90	6"	CPVC	B4, B3	1	NWLS
NW	LLC-11	558.00	8"	CPVC	B5, B4, B3	2	NWLS
N	LLC-12	5.00	6"	CPVC	C4, D4	2	NALS
N	LLC-13	682.30	6"	CPVC	D4	1	NALS
N	LLC-14	98.60	6"	CPVC	C4	0	NALS
N	LLC-15	361.60	6"	CPVC	E4	1	NALS
N	LLC-16	612.50	6"	CPVC	D4, E4	5	NALS
N	LLC-17	467.60	6"	CPVC	D4, E4	3	NALS
N	LLC-18	379.30	6"	CPVC	B4, C4	2	NALS
N	LLC-19	872.30	6"	CPVC	B4, C4, D4	4	NWLS
N	LLC-20	590.50	6"	CPVC	B5, B4, C4	4	NWLS
N	LLC-21	898.60	6"	CPVC	B5, C5, C4,D4	6	NWLS
N	LLC-22	612.20	6"	CPVC	D4, E4, E3	4	NALS
	LLC TOTAL FOOTAGE=		12,395.30				

TABLE B.2
Countywide Landfill
Subcap Leachate Collection System Pipe Inventory

Updated July 13, 2009

Slope Location	Pipe Name:	Pipe Length (Ft.)	Pipe Diameter:	Pipe Type:	Plan Grid Location:	Number of Cleanouts	Receiving Structure
SW	UCC-1	379.90	6"	PVC	B2, C2	1	SWLS
SW	UCC-2	549.10	6"	PVC	B2, C2	1	SWLS
SW	UCC-3	611.10	6"	PVC	B2, C2	1	SWLS
SW	UCC-4	384.60	6"	PVC	B2, C2	1	SWLS
W	UCC-5	634.90	6"	PVC	B4, B3, B2	1	SWLS
W	UCC-6	1,125.00	6"	PVC	B4, B3, B2	2	SWLS
W	UCC-7	1,321.60	6"	PVC	B4, B3, B2	2	SWLS
W	UCC-8	699.30	6"	PVC	B3, B2	1	SWLS
NW	UCC-9	156.20	6"	PVC	B4	0	NWLS
NW	UCC-10	606.80	6"	PVC	B5, B4, B3	1	NWLS
N	UCC-15	75.40	6"	PVC	C4, D4	1	NALS
N	UCC-16	684.70	6"	PVC	C4, D4	3	NALS
N	UCC-17	643.80	6"	PVC	D4, E4	1	NALS
N	UCC-18	459.80	6"	PVC	D4, E4	1	NALS
N	UCC-19	627.70	6"	PVC	D4, D3, E3	4	NALS
NW	UCC-20	393.30	6"	PVC	B4, C4	2	NWLS
N	UCC-21	832.80	6"	PVC	B4, C4	4	NWLS
N	UCC-22	669.40	6"	PVC	B5, B4, C4	5	NWLS
N	UCC-23	747.80	6"	PVC	B5, C5, C4	5	NWLS
	UCC TOTAL FOOTAGE =		12,776.30				
SW	LTL-1	373.10	6"	CPVC	B2	2	SWLS
SW	LTL-2	432.50	6"	CPVC	B2	1	SWLS
NW	LTL-3	359.70	6"	CPVC	B5, B4	1	NWLS
NW	LTL-4	57.80	6"	CPVC	B5	1	NWLS
N	LTL-6	290.60	6"	CPVC	D4, E4	2	NALS
N	LTL-7	64.30	6"	CPVC	D4	1	NALS
N	LTL-8	573.50	6"	HDPE	E4	0	NALS
N	LTL-10	229.90	6"	CPVC	D4	4	NALS
N	LTL-11	483.10	6"	CPVC	C4, D4	3	NALS
N	LTL-12	96.90	6"	CPVC	E4, F4	1	NALS
	LTL TOTAL FOOTAGE =		3,291.10				

APPENDIX C

Lift Station Operating Procedures

APPENDIX C

Lift Station Operation Procedures

Northwest Lift Station (NWLS)

The location of the NWLS is shown on **Figure 3-2**.

Operating Sequence

1. Two Liquid Transmission Lines (LTL) gravity drains connected to the northwest subcap drains feed leachate into the NWLS.
   a. The first connects to the LTL lines from the northwestern slope and isolation break temporary cap areas subcap drains and leachate toe drain collection systems, and
   b. The second line runs from the EGEW liquid transmission forcemain and GCCS condensate knockout located next to the NWLS.
2. Leachate fills the lift station storage until a float switch activates a submersible pump which moves or transports leachate to the 500k-West. A liquid level controller that receives data from a pressure transducer is used as a redundant pump control. The control also provides a digital readout of leachate level in the sump.

Control Features

1. The simplex lift station (**Figure 3-11**) has a 60 gallons per minutes (gpm) pump (Grundfos Model No. 60S30-5 or equivalent). A copy of the manufacturer's literature and the pump operations guide are in **Appendix D**. The pump has its own forcemain which pumps into the gravity line that runs into the Southwest Lift Station (SWLS). From the SWLS, the leachate is then pumped to the West 500k AST.
2. The wet well (**Figure 3-11**) is equipped with redundant liquid level controls to turn pump on, off, or signal high alarm. The redundant control system consists of primary conventional float switches and secondary Endress-Hauser (or equivalent) liquid level controller and a Geotech (or equivalent) pressure transducer water level controller. A copy of the manufacturer's literature and specifications are in **Appendix D**.
3. Inlet flow can be controlled by three valves located east of the wet well inside the waste limits. Two of the valves control flow conveyed by the toe drains and one valve controls flow conveyed by the LTL. These valves should remain open except when servicing the NWLS wet well. Refer to **Appendix L** for maintenance procedures. See Detail of Northwest Lift Station on **Figure 3-11** for locations of these inlet control valves.
4. The NWLS control panel is equipped with a light tower which offers the Operator a visual operating status for the lift station. **Table C.1 – Lift Station Light Tower Diagnostic Guide** provides a legend for the meaning of the light tower sequence.

Capacity Between On, Off and High Alarm

Refer to **Table C.2** attached for liquid level controller setpoints.

1. In AUTO mode, the pump OFF liquid elevation equals 3 feet above finish floor (AFF) and the Liquid level controller is set at 36 inches AFF to ensure that the pump motor is totally submerged in liquid to help keep the motor cool while in operation.
2. In AUTO mode, the pump ON liquid elevation equals 6 inches below inlet elevation. Liquid level controller is set at 6 inches below inlet to allow for maximum storage in the wet well and not to block the inlet flow.
3. The high alarm liquid elevation equals 9 inches above pump ON float liquid elevation and the liquid level controller is set at 9 inches above pump ON float liquid elevation to signal that there is a high liquid level in the wet well and needs to be corrected.

4. Wet well inside diameter is five feet which provides 147 gallons of liquid storage per foot giving the wet well 1,328 gallons of storage before the pump On is initiated. Each run cycle, 882 gallons of leachate are transferred to the SWLS between pump ON and pump OFF set points.
5. Reserve capacity is 220 gallons between pump ON and high alarm liquid elevations. This allows the pump time to operate even during higher than expected inlet flows yet provides an alarm condition before the leachate rises to the overflow level.
6. Influent flow to the NWLS is projected at 10 gpm which correlates to a wet well cycle time of 90 minutes between pump OFF and pump On and a pump run cycle time between pump ON and pump OFF is calculated to be about 15 minutes. Actual flow rate may vary.

Note: Pump ON and Pump OFF liquid level controller set points and float switch elevations may vary to best suit operations.

Start Up and Shut Down Sequence

1. Under normal operating procedures, leachate enters sump through a gravity inlet at elevation 1,134.00' above mean sea level (amsl) with a flow rate at approx. 10 gpm. The off float energizes as leachate rises to elevation 1,129' amsl, from that point it takes approximately 1.5 hours for the liquid level to rise to elevation 1,134.44' amsl and turn on the pump. The pump sends leachate through the force main where it spills into the SWLS at a rate of 60 gpm. At this rate, the pump should move the liquid level down in approximately 15 minutes, where the float should open and shut off the pump and begin the cycle again. The floats should be set to operate before the liquid level controller. The liquid level controller transducer should be set 2 inches off the sump floor, allowing the operator to visually observe the floats operate the system.

2. The Lag pump should only come on due to unusual circumstances (i.e., high inlet flows, lead pump wear or failure, plugged discharge line, closed valves etc.). Any of which should be immediately corrected.

Southwest Lift Station (SWLS)

The location of the Southwest Lift Station is shown on **Figure 3-2**.

Operating Sequence

1. Two gravity lines feed leachate into the solids grit chamber and then to the SWLS.
   a. The first line runs from the temporary cap areas E and W subcap drains and LTD collection systems.
   b. The second line runs from the existing West sump, EGEW liquid transmission forcemain and gas collection and control system (GCCS) condensate knockout at the South Flare Station. The SWLS also receives flow from the NWLS.
2. Leachate fills the wet well until a float switch activates a submersible pump which moves or transports leachate to the West 500k AST.

Control Features

1. The duplex pump station (**Figure 3-12**) has two150 gpm pumps (Grundfos Model No. 150S75-5 or equivalent). A copy of the Manufacturer literature and the pump operations guide are in **Appendix D**. Each pump has its own forcemain to the West 500k AST. The lead pump will operate until the influent receiving rate exceeds the lead pump effluent rate at which time the lag pump will be activated to assist the lead pump. The lead and lag pumps can be alternated.
2. The wet well (**Figure 3-13**) is equipped with redundant liquid level controls to turn pump on, off, or signal high alarm. The redundant control system consists of primary conventional float switches and secondary Endress-Hauser (or equivalent) liquid level controller and a Geotech (or equivalent) pressure transducer. See **Appendix D**.

3. The backup generator (**Figure 3-12**) with automatic transfer switch maximizes assurance that power is available at all times. This back up generator is provided with self testing switch gear to periodically exercise and test the backup generator.
4. The automatic alternating pump (**Figure 3-17**) controls either alternate operation of the pumps or run one pump as lead, and one as lag pump.
5. The valving for pumps above ground (**Figure 3-12**) provides operational flexibility between pumps and redundant forcemains. The outlet valves can be positioned to select which forcemain will be used. Refer to **Table C.3 – Lift Station Valve Position Guide** attached. The forcemains can be valved to transmit leachate to either the West 500k AST or the East 500k AST, or the SAST. Refer to Valve House Detail shown on **Figure 3-16** and **Table C.4 – SAST Valve Building Valve Position Guide** attached.
6. The auto dialer emergency call out (with battery backup) will notify the operator if high wet well alarm, loss of power, or water in the emergency overflow tanks alarms are activated.
7. The SWLS control panel is equipped with a light tower which offers the Operator a visual operating status for the lift station. **Table C.1 – Lift Station Light Tower Diagnostic Guide** provides a legend for the meaning of the light tower sequence.

Lift Station Capacity Between Pump On, Off, and High Alarm Levels

Refer to **Table C.2** attached for liquid level controller setpoints.

1. Pump OFF (Lead and Lag) liquid elevation equals 3'-4" AFF. Liquid level controller is set at 40 inches AFF.
2. Lead pump ON liquid elevation equals 9 inches below inlet. Liquid level controller is set at 9 inches below inlet.
3. Lag pump ON liquid elevation equals 9 inches above Lead pump ON float liquid elevation. Liquid level controller is set at 9 inches above Lead pump ON liquid elevation.
4. High alarm liquid elevation equals 9 inches above lag pump ON float liquid elevation. Liquid level controller is set at 9 inches above lag pump ON float liquid elevation.
5. Wet well inside diameter is five feet.
6. Wet well liquid storage capacity equals 147 gallons per foot of liquid. 1,911 gallons of leachate are transferred between pump ON and pump OFF set points. Reserve capacity is 220 gallons between pump ON and high alarm liquid elevations.
7. Influent leachate flow to the SWLS is projected at 20gpm. Cycle time between pump ON and pump OFF is calculated to be 15 minutes for simplex (one pump) and 8 minutes for duplex (two pump) operation.

Note: Pump ON and pump OFF liquid level controller set points and float switch elevations may vary to best suit operations.

Start Up and Shut Down Sequence

1. Under normal operating procedures, leachate enters the SWLS wet well through a gravity inlet at elevation 1,093' (204 inches AFF) with a flow rate of approximately 20 gpm. The pump OFF float energizes as leachate rises to 1,079.33' elevation (40 inches AFF). At approximately 20 gpm influent rate, the wet well will fill to the lead pump ON float liquid elevation at 1,092.33 feet (196 inches AFF) in about 90 minutes. The lead pump sends leachate through the force main to the West 500k AST at a rate of 150 gpm. At this rate, the pump moves the leachate in the SWLS down to the pump OFF liquid elevation in approximately 15 minutes. When the liquid level drops to the pump OFF elevation, the pump OFF float switch opens to shut off the pump and begin the cycle again. The float switches should be set to operate the pumps before the liquid level controller. The liquid level controller transducer should be set 2 feet off the sump floor, allowing the operator to visually observe the float switches operate the system.

2. The Lag pump should only come on due to unusual circumstances (i.e., high inlet flows, lead pump wear or failure, plugged discharge line, closed valves etc.). Operating the lag pump will provide the operator with an indication that system maintenance is required in the absence of an event causing a significant increase in influent leachate volumes.

North Area Lift Station (NALS)

The location of the North Area Lift Station is shown on **Figure 3-2** attached.

Operating Sequence

1. A gravity line feeds leachate into the NALS wet well which collects leachate from the condensate knockout of the North Flare Station, leachate from Temporary Cap area D plus eastern cells 2 and 3 sub cap drain collectors and LTDs. Leachate removed from cell 4 and cell 1 floor leachate collection systems is also transmitted to the NALS.

2. Influent leachate fills the NALS wet well until a float switch starts a submersible pump which transfers the leachate to the West 500k AST.

Control Features

1. The duplex pump station (**Figure 3-15**) has two 150 gpm pumps (Grundfos Model No. 150S75-5 or equivalent). Manufacturer literature and the pump operations guide are in **Appendix D**). Each pump has its own forcemain to the West 500k AST. The lead pump will operate until the influent receiving rate exceeds the lead pump effluent rate, at which time the lag pump will be activated to assist the lead pump. The lead and lag pumps can be alternated.
2. The wet well (**Figure 3-15**) is equipped with redundant liquid level controls to turn pump on, off, or signal high alarm. The redundant control system consists of primary conventional float switches and secondary Endress-Hauser (or equivalent) liquid level controller and a Geotech (or equivalent) pressure transducer. See **Appendix D**.
3. The backup generator (**Figure 3-15 inset)** has automatic transfer switch to maximize assurance that power is available at all times This back up generator is provided with self-testing switch gear to periodically exercise and test the backup generator.
4. The automatic alternating pump (**Figure 3-17**) controls either alternate operation of the pumps or run one pump as lead, and one as lag pump.
5. The valving for above ground pumps (**Figure 3-16**) provides operational flexibility between pumps and forcemains. The forcemains can be valved to transmit leachate to either the West 500k AST tank or the East 500k AST, or the NAST.
6. Auto dialer emergency calls out (with battery backup) if high wet well alarm or loss of power occurs.
7. The NALS control panel is equipped with a light tower which offers the Operator a visual operating status for the lift station. **Table C.1 – Lift Station Light Tower Diagnostic Guide** provides a legend for the meaning of the light tower sequence.

Capacity Between On, Off and High Alarm

Refer to **Table C.2** attached for liquid level controller setpoints.

1. Pump OFF (Lead and Lag) liquid elevation equals 3’-4” above AFF. Liquid level controller is set at 40 inches AFF.
2. Lead pump ON liquid elevation equals 8 inches below inlet. Liquid level controller is set at 8 inches below inlet.

3. Lag pump ON liquid elevation equals 9 inches above Lead pump ON float liquid elevation. Liquid level controller is set at 9 inches above Lead pump ON liquid elevation.
4. High alarm liquid elevation equals 8 inches above lag pump ON float liquid elevation. Liquid level controller is set at 8 inches above lag pump ON float liquid elevation.
5. Wet well inside diameter is five feet.
6. Wet well liquid storage capacity equals 147 gallons per foot of liquid. 1,470 gallons of leachate are transferred between pump ON and pump OFF set points. Reserve capacity is 220 gallons between pump ON and high alarm liquid elevations.
7. Influent leachate flow to the NALS is projected at 20gpm. Cycle time between pump ON and Pump OFF is calculated to be 15 minutes for simplex (one pump) and 8 minutes for duplex (two pump) operation.

Note: Pump ON and Pump OFF liquid level controller set points and float switch elevations may vary to best suit operations.

Start Up and Shut Down Sequence

1. Under normal operating procedures, leachate enters the NALS wet well through a gravity inlet at elevation 1,068.30' (169 Inches AFF) and flow rate of approximately 20 gpm. The pump OFF float energizes as leachate rises to elevation 1,057.56' (40 Inches AFF). At approximately 20 gpm influent rate, the wet well will fill in approximately 1 hour to the lead pump ON float liquid elevation at elevation 1,067.56' (160 Inches AFF). The lead pump sends leachate through the force main to the West 500k AST at a rate of 150 gpm, and moves the leachate in the NALS down to the pump OFF liquid elevation in approximately 10 minutes. When the liquid level drops to the pump OFF elevation, the pump OFF float switch opens to shut off the pump and begin the cycle again. The float switches should be set to operate the pumps before the liquid level controller. The liquid level controller transducer should be set 2 inches above the sump floor, allowing the operator to visually observe the float switches operate the system.
2. The Lag pump should only come on due to unusual circumstances (i.e., high inlet flows, lead pump wear or failure, plugged discharge line, closed valves etc.). Operating the lag pump will provide the operator with an indication that system maintenance is required in the absence of an event causing a significant increase in influent leachate volumes.

TABLE C.1
Countywide Landfill
Lift Station Light Tower Diagnostic Guide

Beacon Light Color	Function Status Description When Lighted	Appropriate Operator Response
ON	POWER AVAILABLE	1-Power Available
OFF	EMERGENCY! SUMP OVER FULL "FLASHING"	2-Check level should be lower than pump ON setting
OFF	PUMP RUNNING	

Beacon Light Color	Function Status Description When Lighted	
ON	POWER AVAILABLE	1-Power Available
OFF	EMERGENCY! SUMP OVER FULL "FLASHING"	2-Check level should be going down pump is running
ON	PUMP RUNNING	

Beacon Light Color	Function Status Description When Lighted	
ON	POWER AVAILABLE	1-Power Available
ON	EMERGENCY! SUMP OVER FULL "FLASHING"	2-Check why pump is not running. Try in hand position
OFF	PUMP RUNNING	3-Ensure no overflow get pumps working

Beacon Light Color	Function Status Description When Lighted	
ON	POWER AVAILABLE	1-Power Available
ON	EMERGENCY! SUMP OVER FULL "FLASHING"	2-Check level, both pumps working, inlet flow, Valves open
ON	PUMP RUNNING	3-Ensure no overflow get pumps working

Beacon Light Color	Function Status Description When Lighted	
OFF	POWER AVAILABLE	1-Power Available? Blown fuse?
OFF	EMERGENCY! SUMP OVER FULL "FLASHING"	2-Check wet well level
OFF	PUMP RUNNING	3-Generator working?

TABLE C.2

Countywide Landfill
Lift Station Operating Setpoints

Structure	Type	Flows To	Depth	Pump On	Pump Off	High Level
Northern Area Lift Station	Duplex	West 500k AST	169”	8” below inlet	40” above floor	8” above inlet
East Sump	Duplex	West 500k AST	N/A	18” below inlet	24” above floor	6” below inlet
Northwest Lift Station	Simplex	Southwest Lift Station	96”	6” below inlet	36” above floor	9” above inlet
Southwest Lift Station	Duplex	500k AST-West	204”	8” below inlet	40” above floor	9” above inlet

Note: Pump On, Pump Off, and High Level settings are provided for start-up purposes. Actual set points may vary as operational conditions and requirements change.

TABLE C.3
Countywide Landfill
Lift Station Valve Position Guide

Flow From:	Valve Numbers			Flow to:
	V 1	V 2	V 3	
NALS FM 6	O			West 500k tank
NALS FM 7		O	X	West 500k tank
NALS FM		X	O	NAST 30k tank
Southwest L.S. FM 8	O			West 500k tank
Southwest L.S. FM 9		O		West 500k tank

Valve position: O=100% Open X=100% Closed
Start up valve postions

Notes:

Lift station valves are primarily for service work except for the North L.S. FM 7 which can go to either the NAST or the West 500k tank

The NAST has **NO INTERLOCK** protection to shut off NALS pumps if flow is diverted to it. Pumps MUST be shut off manually to prevent overfilling the tank

TABLE C.4
Countywide Landfill
SAST Valve Building Valve Position Guide

Flow From:	Valve Numbers			Desired Flow To:
	V 1	V 2	V 3	
Cell 5 A/B	O	X	X	30,000 SAST
Cell 5 A/B	X	O	X	SW FM 9
Cell 5 A/B	X	X	O	SW FM 8
	V 4	**V 5**	**V 6**	
Cell 5 C/D	O	X	X	30,000 SAST
Cell 5 C/D	X	O	X	SW FM 9
Cell 5 C/D	X	X	O	SW FM 8
	V 7	**V 8**		
SW FM 8	O	X		West 500k FM 9
SW FM 9	X	O		30,000 SAST
	V 9	**V 10**		
SW FM 8	O	X		West 500k FM 8
SW FM 9	X	O		30,000 SAST
	V 11	**V 12**		
Cell 7, 8A and 8B FM 10	O	X		30,000 SAST
Cell 7, 8A and 8B FM 10	X	O		SW FM 10

Valve position: O=100% Open X=100% Closed
Start up valve postions

Notes:

1 The Southwest Lift Station has two forcemains, FM8 and FM9 that are routed through the SAST Valve Building and connect to the 500k ASTs. The forcemains are redundant and one is maintained on standby.

2 The flow in FM8 and FM9 can be diverted to the SAST by changing the valve position in the SAST Valve Building as shown in the table.

3 Forcemains connecting Cell 5A/B sump and Cell 5C/D sump to FM8 and FM9 can be valved to use either FM8 or FM9. Flow from Cell 5A/B and Cell 5C/D can be diverted to the SAST or the 500k ASTs by changing valve positions in the SAST Valve Building as shown in the table

4 Flow from the forcemain connecting Cell 7, Cell 8A, and Cell 8B can be diverted to the SAST or by using FM10 to the 500k ASTs by changing valve positions in the SAST Valve Building as shown in the table.

5 The SAST has **NO INTERLOCK** protection to shut off pumps if flow is diverted to it. Pumps MUST be shut off manually to prevent overfilling the tank

6 The SAST is primarily only to be used in emergency or temporary storage to facilitate maintenance on the 500k ASTs

7 Valves are to be 100% open or 100% closed

APPENDIX D

Manufacturer's Literature

Manufacturers' Literature Index

Manufacturer	On Site Location
Allen Bradley	West-500k pump house
Aquastore*	East and West-500k tanks NAST and SAST
Baldor Motors	Loadout pump motors 500k, NAST and SAST
Endress-Hauser	Cell risers, Storage tanks and Lift stations
Franklin Motors	On all Grundfos pumps: Cell risers and Lift stations
Geotech	Cell risers, Storage tanks and Lift stations
Goulds Pumps	Loadout pumps at: 500k, NAST and SAST
Grundfos Pumps	Cell risers and Lift stations
Ramco Aeration	East-500k and West-500k AST's
Stancor pumps	East sump, 500k loadout pad
Wacker Generators	NALS, SWLS and flare stations

Refer to the Manufacturers' Literature binder located near the OM&M manuals for detailed equipment information.

APPENDIX E

Leachate Storage Tank Operating Procedures

APPENDIX E

Leachate Storage Tank Operating Procedures

General Operation

The 500k ASTs (West 500k AST and East 500k AST) serve as the primary storage tanks for the Countywide RDF. The North Above Ground Storage Tank (NAST) and the South Above Ground Storage Tank (SAST) provide temporary storage capacity to facilitate maintenance on the 500k ASTs (**Appendix M**) or other components of the leachate collection system. The storage function for the 500k ASTs is intended to be passive (requires little operator assistance or attention) under normal operating conditions. Valves must be operated manually to allow alternate storage options; and defoaming (**Appendix F**) and aeration subsystems require operator involvement.

The 500k AST's are equipped with dedicated color coded light towers located on the aerial tower above the pump house. The light towers provide the operator with a quick visual summary of the tank operating status at a glance from a distance or drive by observation. A legend identifying the significance of the color code along with a guide to assist the operator diagnose faults indicated by the 500k AST Control Light Tower display is provided in **Table E.1 – 500k AST Tank Light Tower Guide**. **Table E.1** is applicable to the NAST and SAST as well.

Controls – In normal operating mode, the 500k AST tank operator switch located on the main control panel in the pump house should be in the "Automatic" position. In this position, all normal operating modes, filling, transfer, level monitoring, etc., are enabled. Leachate is pumped to the tank by the lift stations and leachate cell sumps. The leachate enters the top of the tank where it then collects and begins to fill the tank. The leachate level within the tank is monitored by an Endress-Hauser (or equivalent) level controller pressure transducer. The pressure transducer's 4 – 20 milliamp (mA) signal is converted to depth measured in feet of fluid above the tank floor by the digital process meter located in the pump house. The level controller set points for the 500k ASTs and the NAST and SAST are provided in **Table E.2 – Storage Tank Level Controller Set Points** attached. The attached **Figure E.1** provides the 500k AST control panel electrical schematics.

Process Valves – The 500k AST installation is equipped with valves which provide operational flexibility and environmental security. These valves are identified on the tank schematic shown on **Figure 3-19**. A guide to valve position selection is provided in the attached **Table E.3 – 500k AST Valve Building – Valve Position Guide**. In normal operating mode, valves should be positioned as indicated in **Table E.3**.

Tank Aeration

The aeration system can be used to serve two purposes, which are discussed below.

1. *Prevent Freezing.* When atmospheric temperatures fall below 40ºF, the operator should set the aeration system to automatic mode. In automatic mode, the aeration system will agitate the stored liquids to prevent freezing.

2. *Reduce Solids Accumulation.* The agitation caused by the aerator can re-suspend solids which have settled out of the stored leachate. This is useful for removing solids from the tank, and should be conducted periodically to prevent excessive solids accumulation in the bottom of the tank.

The East 500k AST and West 500k AST are equipped with two 25 horse power (hp) air compressors (Ramco Aeration Systems) to deliver high volume air at a low pressure through a series of injection nozzles installed inside of the tanks. Air is used to help prevent solids from settling out and to prevent leachate from freezing in the winter. A visual check from the top of the tank witness manhole can confirm how well the air is being distributed in the tank. The bubbler system should be operated for at least 8 hours a week during the summer to mix and prevent the solids from settling out. This is performed by setting the Hand-Off-Auto switch (HOA) to Hand. In the winter, it should be set to run automatically by setting the switch to Auto. In automatic mode, operation is controlled by a temperature controller which uses a thermocouple located inside the tank. If liquid temperature falls below 40º F, the blowers will operate until the liquid temperature exceeds 40º F. Daily recordings of air compressor run times are to be used for following the manufacturer's recommended service and maintenance plan. Spare blower belts, oil and grease should be kept in the pump house for quick

service. Manufacturer's literature is provided in Appendix D. Reference pictures can be found in **Photo Log E**.

Defoamer

The defoaming system is intended to prevent excess foam generation in the tank. Foam generation is highly variable, and can depend on leachate chemistry, start up of new collection system whose components may have soap residue remaining from their manufacturing process, the ambient temperature, biological activity, and operation of the aeration system. The operator should periodically open the inspection port on top of the tank and observe the stored leachate. If excess foam is observed, the operator should activate the defoaming system. The presence of excess foam may become apparent during tanker truck transfer operations. Excess foam can also trigger the tank full or high alarm floats while the sliding scale and liquid level controllers indicate the liquid level is within the normal operating range. Procedures for operating the defoaming system are described in detail in **Appendix F**.

Radio Interlock

The radio interlock does not require operator assistance. If a tank full or hi alarm is activated, it sends a radio signal to the lift stations and cell floor sump pump control panels to deactivate the pumps until the liquid level in the tank falls within the normal operating range or in the case of a hi alarm, the operator manually resets the alarm after the liquid level in the tank has fallen within the normal operating range.

- The operator can set the tank interlock controls such that Cells-1, 2N, 2S, 3, 5a/b, 5c/d, 7, 8a, 8b and 16 leachate pumps are controlled by either the East or West 500k storage tank, depending on which tank the operator has selected to receive the flow.
- The Cell 4 leachate pump can be controlled by either the NALS or the NAST interlock controls, depending on which tank (500k AST or NAST) the operator has selected and valved to receive the flow.
- The SWLS and NALS pumps are NOT controlled by the neither the SAST nor 500k tanks interlock controls.

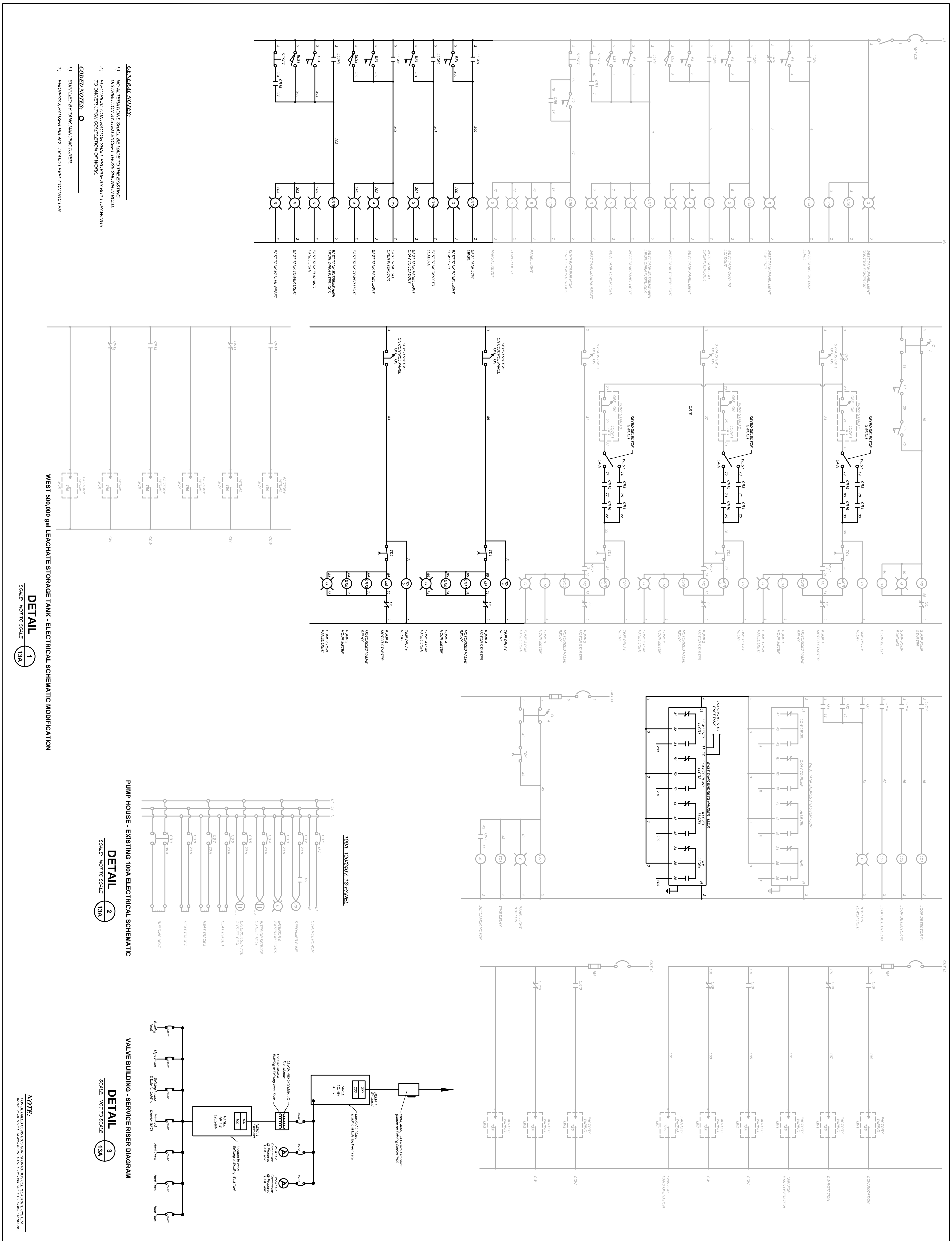
As designed, the interlock controls and forcemain valving should be set as follows:

- Cells 1, 2N, 2S, 3, 5a/b, 5c/d, NALS and the SWLS are to pump into the West 500k AST.
- Cells 7, 8a, 8b and 16 are to pump into the East 500k AST.
- Cell 4 is pumped into the NALS.
- The NAST and SAST are for emergency or temporary use.
- Condensate sumps, the East sump and the Northwest sump, will have no interlock control.

Inspections

Operating the 500k AST's will require monitoring the liquid levels within the storage tanks and verifying adequate trucking is available to haul leachate to an approved WWTF. This monitoring will be performed daily through an inspection and completion of the **Checklist A.1 – Routine Leachate System Checklist and Correction Form** attached to **Appendix A.** Inspection routines pertaining to tank maintenance are attached to **Appendix M.**

L:\work\103345\CAD\Civil\FIG E.1 2.dwg, 7/28/2009 3:04:38 PM, Adobe PDF, 11 x 17, 1:2.68245



COUNTYWIDE RECYCLING AND DISPOSAL FACILITY
REPUBLIC SERVICES
3619 GRACEMONT STREET S.W.
EAST SPARTA. OHIO 44626
500k TANKS ELECTRICAL SCHEMATICS

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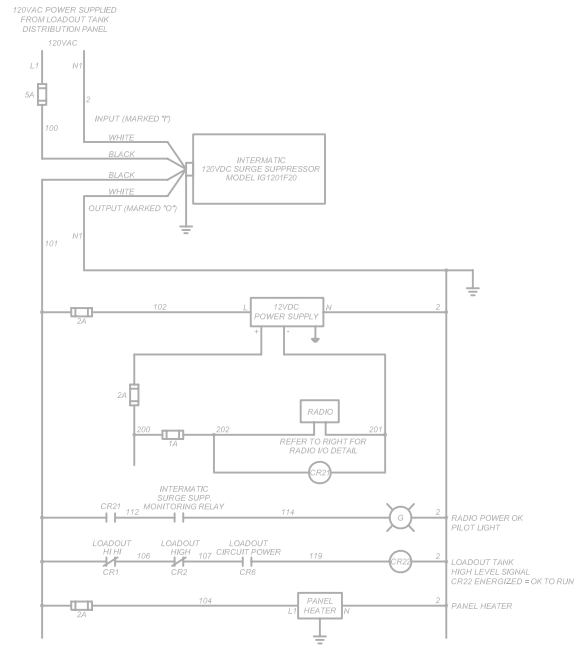
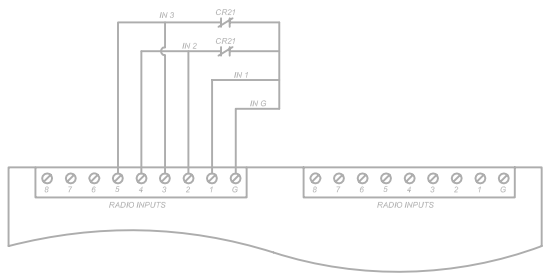
Designed:
Drawn: DCT 06/04/2009
Checked: AMD 06/04/2009
Approved: DMD 06/04/2009
PROJECT NUMBER
103345
SHEET REFERENCE NUMBER

FIG. E.1

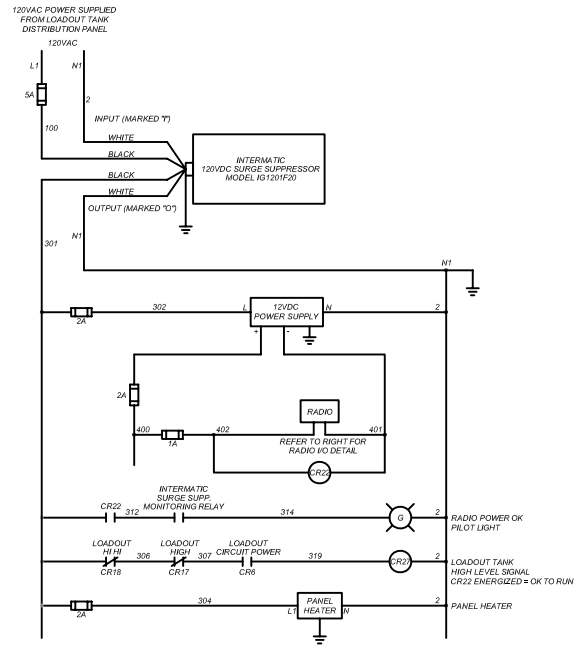


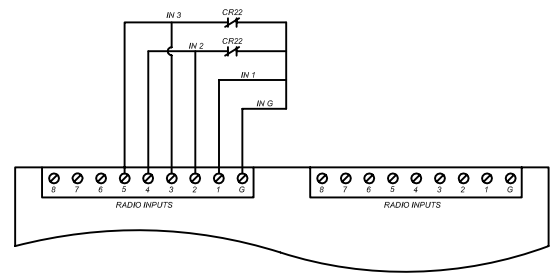


RADIO I/O DETAIL

WEST TANK - RADIO INTERLOCK

DETAIL 1/13B
SCALE: NOT TO SCALE





RADIO I/O DETAIL

EAST TANK - RADIO INTERLOCK

DETAIL 2/13B
SCALE: NOT TO SCALE

LOADOUT TANK MASTER RADIO

SYSTEM CONFIGURATION

PARAMETER	SETTING
RADIO MODEL	PACESETTER
RADIO CONFIGURATION	MULTIPLE REMOTES/SLAVES
# OF REMOTE/SLAVE RADIOS	5
RADIO BAUD RATE	19200 – MUST MATCH RADIO CODING

RADIO CONFIGURATION

PARAMETER	SETTING
RADIO CALL NUMBER	485-4010 VER 3.33C 5/23/03
RADIO MODE	2 – POINT TO MULTIPOINT MASTER
RADIO BAUD RATE	19200 // STANDARD HOP TABLE
RADIO CAL ENTRY #	000-1710
RADIO PARAMETERS	SEE RADIO PARAMETERS
MULTIPOINT PARAMETERS	SEE MULTIPOINT PARAMETERS
NUMBER OF REPEATERS	2

CELL 7 REPEATER (SOLAR PANEL)

SYSTEM CONFIGURATION

NONE REQUIRED	
RADIO MODEL	INTEGRAL

RADIO CONFIGURATION

PARAMETER	SETTING
RADIO CALL NUMBER	485-4014 VER 3.33C 5/23/03
RADIO MODE	3 – POINT TO MULTIPOINT REPEATER
RADIO BAUD RATE	19200 // STANDARD HOP TABLE
RADIO CAL ENTRY #	000-1715
RADIO PARAMETERS	SEE RADIO PARAMETERS
MULTIPOINT PARAMETERS	SEE MULTIPOINT PARAMETERS
NUMBER OF REPEATERS	2 – MULTIPOINT PARAMETERS

CELL 7 REMOTE/SLAVE RADIO

SYSTEM CONFIGURATION

PARAMETER	SETTING
RADIO MODEL	PACESETTER
RADIO CONFIGURATION	MULTIPLE REMOTES/SLAVES
# OF REMOTE/SLAVE RADIOS	5
RADIO BAUD RATE	19200 – MUST MATCH RADIO CODING

RADIO CONFIGURATION

PARAMETER	SETTING
RADIO CALL NUMBER	485-4012 VER 3.33C 5/23/04
RADIO MODE	5 – POINT TO MULTIPOINT SLAVE
RADIO BAUD RATE	19200 // STANDARD HOP TABLE
RADIO CAL ENTRY #	485-1714
RADIO PARAMETERS	SEE RADIO PARAMETERS
MULTIPOINT PARAMETERS	SEE MULTIPOINT PARAMETERS
NUMBER OF REPEATERS	2 – MULTIPOINT PARAM 2)

CELL 5CD REMOTE/SLAVE RADIO

SYSTEM CONFIGURATION

PARAMETER	SETTING
RADIO MODEL	PACESETTER
RADIO CONFIGURATION	MULTIPLE REMOTES/SLAVES
REMOTE/SLAVE RADIO NUMBER	6
RADIO BAUD RATE	19200 – MUST MATCH RADIO CODING

RADIO CONFIGURATION

PARAMETER	SETTING
RADIO CALL NUMBER	485-4013 VER 3.33C 5/23/04
RADIO MODE	5 – POINT TO MULTIPOINT SLAVE
RADIO BAUD RATE	19200 // STANDARD HOP TABLE
RADIO CAL ENTRY #	485-1711
RADIO PARAMETERS	SEE RADIO PARAMETERS
MULTIPOINT PARAMETERS	SEE MULTIPOINT PARAMETERS
NUMBER OF REPEATERS	0 – MULTIPOINT PARAM 2)

CELL 8 REMOTE/SLAVE RADIO

SYSTEM CONFIGURATION

PARAMETER	SETTING
RADIO MODEL	PACESETTER
RADIO CONFIGURATION	MULTIPLE REMOTES/SLAVES
REMOTE/SLAVE RADIO NUMBER	2
RADIO BAUD RATE	19200 – MUST MATCH RADIO CODING

RADIO CONFIGURATION

PARAMETER	SETTING
RADIO CALL NUMBER	485-4015 VER 3.33C 5/23/04
RADIO MODE	5 – POINT TO MULTIPOINT SLAVE
RADIO BAUD RATE	19200 // STANDARD HOP TABLE
RADIO CAL ENTRY #	485-1712
RADIO PARAMETERS	SEE RADIO PARAMETERS
MULTIPOINT PARAMETERS	SEE MULTIPOINT PARAMETERS
NUMBER OF REPEATERS	0 – MULTIPOINT PARAM 2)

RADIO PARAMETERS

PARAMETER	SETTING
FREQUENCY KEY	4
MAX PACKET SIZE	0
MIN PACKET SIZE	2
ON TIME	1
RF DATA RATE	0
DATE SCRAM	5
SLAVE LATENCY	0
RTS TO CTS	1
RETRY TIME OUT	250

MULTIPOINT PARAMETERS

PARAMETER	SETTING
NUMBER REPEATERS	SEE RADIO SETTING
MAX PACKET REPEAT	3
MAX SLAVE RETRIES	2
DELAY SLOTS	3
HOP SEQUENCE	0
REPEATER FREQUENCY	10
MY NODE ID	255
SLAVE/REPEATER	0
SLAVE ID	DISABLED

OTHER PARAMETERS

PARAMETER	SETTING
DATA RATE	0
MODBUS ID	3
HOP ADJ MODE	0
HOP TABLE SIZE	112
HOP FREQUENCY OFFSET	3

RADIO CONTROL SYSTEM PARAMETERS

DETAIL 3/13B
SCALE: NOT TO SCALE

Countywide Landfill
Radio Interlock Control

RE: Radio control to shut off inlet pumps when storage tank is full

Final design will include:

Cells-1, 2N, 2S, 3, 5A/B, 5C/D, 7, 8A, 8B and 16 to be controlled by either the East or West 500k storage tank, depending on which tank they are pumping into.

Cell 4 to be controlled by either the North lift station or the North above ground storage tank (NAST), depending on which tank it is pumping into.

The Southwest and North lift stations will NOT be shut off while filling any of the 500k tanks

Original set up is to be:

Cells 1, 2N, 2S, 3, 5A/B, 5C/D, North L.S. and the Southwest L.S. are to pump into the West 500k storage tank

Cells 7, 8A, 8B and 16 are to pump into the East 500k storage tank

Cell 4 is pump into the North lift Station

The NAST and SAST are for emergency use

Condensate sumps, the East sump and the Northwest sump will have no interlock control

RADIO CONTROL SYSTEM - CONTROL PROCESS

DETAIL 4/13B
SCALE: NOT TO SCALE

GENERAL NOTES:

1.) NO ALTERATIONS SHALL BE MADE TO THE EXISTING DISTRIBUTION SYSTEM EXCEPT THOSE SHOWN IN BOLD.

2.) ELECTRICAL CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS TO OWNER UPON COMPLETION OF WORK.

NOTE:
FOR DETAILED CONSTRUCTION INFORMATION SEE "LEACHATE SYSTEM INPROVEMENTS" DRAWINGS PREPARED BY DIVERSIFIED ENGINEERING INC.

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COUNTYWIDE RECYCLING AND DISPOSAL FACILITY
REPUBLIC SERVICES
3619 GRACEMONT STREET S.W.
EAST SPARTA, OHIO 44626
RADIO CONTROL DETAILS

Issued

Rev	Date	Description

Designed:
Drawn: DCT 08/04/2009
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PROJECT NUMBER
103345

SHEET REFERENCE NUMBER
FIG. E.2

TABLE E.1
Countywide Landfill
500k AST Tank Light Tower Guide

Beacon Light Sequence	Function Status Description When Lighted	Appropriate Operator Response
ON	POWER AVAILABLE	1. Check to see if control operator is in auto mode
	EMERGENCY! TANK OVER FULL	2.Level controller reading indicates ready to accept leachate
	LOAD OUT PUMP RUNNING	3.Inlet pumps to tank should be operational
	TANK FULL. CELL AND LIFT STATION PUMPS LOCKED OUT	
	SUMP HIGH LEVEL (Applies to NAST and 500k AST only)	
ON	POWER AVAILABLE	1. Check control operator is in auto mode
	EMERGENCY! TANK OVER FULL	2. Truck should be on load out pad and receiving leachate
ON	LOAD OUT PUMP RUNNING	
	TANK FULL. CELL AND LIFT STATION PUMPS LOCKED OUT	
	SUMP HIGH LEVEL (Applies to NAST and 500k AST only)	
ON	POWER AVAILABLE	1. Check control operator is in auto mode
	EMERGENCY! TANK OVER FULL	2. Storage tank is full and leachate needs to be hauled off site
	LOAD OUT PUMP RUNNING	3. If storage tank is not full, troubleshoot interlock.
ON	TANK FULL. CELL AND LIFT STATION PUMPS LOCKED OUT	
	SUMP HIGH LEVEL (Applies to NAST and 500k AST only)	
ON	POWER AVAILABLE	1. Check control operator is in auto mode
ON	EMERGENCY! TANK OVER FULL	2.Check storage tank level first set of floats and transducer settings
	LOAD OUT PUMP RUNNING	3.Check all inlet pumps to see that they are locked out
ON	TANK FULL. CELL AND LIFT STATION PUMPS LOCKED OUT	4. Storage tank is full and leachate needs to be hauled off site
	SUMP HIGH LEVEL (Applies to NAST and 500k AST only)	5. Once leachate level in tank is lowered to a level which tank can receive more a reset manual lockout
ON	POWER AVAILABLE	1. Check sump pump operation, pump may be inoperable or unable to keep up with large inflow.
	EMERGENCY! TANK OVER FULL	2.Reset controls in pump house to allow load out pumps to work
	LOAD OUT PUMP RUNNING	4. Pull and replace pump if bad
	TANK FULL. CELL AND LIFT STATION PUMPS LOCKED OUT	3. Pull and replace pump if bad
ON	SUMP HIGH LEVEL (Applies to NAST and 500k AST only)	
ON	POWER AVAILABLE	1. Check control operator is in auto mode
	EMERGENCY! TANK OVER FULL	2. Check that load out pump is not in hand position
ON	LOAD OUT PUMP RUNNING	3. Check the controls load out pump not to operate at same time as a sump high wet well
	TANK FULL. CELL AND LIFT STATION PUMPS LOCKED OUT	
ON	SUMP HIGH LEVEL (Applies to NAST and 500k AST only)	
OFF	POWER AVAILABLE	1. Check for power - possible blown fuse, tripped breaker or power outage
OFF	EMERGENCY! TANK OVER FULL	2. Check Light bulb in "Power Available" beacon. Replace if bad.
OFF	LOAD OUT PUMP RUNNING	
OFF	TANK FULL. CELL AND LIFT STATION PUMPS LOCKED OUT	
OFF	SUMP HIGH LEVEL (Applies to NAST and 500k AST only)	

TABLE E.2

Countywide Landfill
Storage Tank Level Controller Set Points

500k AST-West – Level Controller Set Points		
Set Point	**Setting**	**Function**
Low Alarm	24”	Disables the transfer pump operation until liquid levels rise above this set point to prevent the pumps from running dry. The light tower does not display this alarm condition. The “OK to loadout” indicator light on the main control panel will not be lit.
Hi Alarm	360”	Signals the fluid level in the tank is approaching the maximum operating level (15,151 gallons of additional storage available before the Hi Hi Alarm activates). When activated, the amber light on the light tower will display and open the cell pumps interlock and stopping additional inlet flow to the tank.
Hi Hi Alarm	372”	Signals the liquid level in the tank has reached its maximum operating level. When the Hi Hi Alarm is activated, it disables the lift station and cell sump pump operation to prevent overflowing the tank. When activated, the red flashing strobe on the light tower will display. This alarm must be manually reset by the Operator after a sufficient volume of leachate has been transferred from the tank to show the first alarm did not stop flow into the tank.
NAST – Level Controller Set Points		
Set Point	**Setting**	**Function**
Low Alarm	24”	Disables the transfer pump operation until liquid levels rise above this set point to prevent the pumps from running dry. The light tower does not display this alarm condition. The “OK to loadout” indicator light on the main control panel will not be lit.
Hi Alarm	192”	Signals the fluid level in the tank is approaching the maximum operating level (3,000 gallons of additional storage available before the Hi Hi Alarm activates). When activated, the amber light on the light tower will display and open the cell 4 pump interlock and stopping additional inlet flow to the tank.
Hi Hi Alarm	216”	Signals the liquid level in the tank has reached its maximum operating level. When the Hi Hi Alarm is activated, it disables the cell 4 sump pump operation to prevent overflowing the tank. When activated, the red flashing strobe on the light tower will display. This alarm must be manually reset by the Operator after a sufficient volume of leachate has been transferred from the tank to show the first alarm did not stop flow into the tank.
SAST – Level Controller Set Points		
Set Point	**Setting**	**Function**
Low Alarm	24”	Disables the transfer pump operation until liquid levels rise above this set point to prevent the pumps from running dry. The light tower does not display this alarm condition. The “OK to loadout” indicator light on the main control panel will not be lit.
Hi Alarm	192”	Signals the fluid level in the tank is approaching the maximum operating level (3,000 gallons of additional storage available before the Hi Hi Alarm activates). When activated, the amber light on the light tower will display
Hi Hi Alarm	216”	Signals the liquid level in the tank has reached its maximum operating level. When the Hi Hi Alarm is activated, the red flashing strobe on the light tower will display. This alarm must be manually reset by the Operator after a sufficient volume of leachate has been transferred from the tank to show the first alarm did not stop flow into the tank.

TABLE E.3
Countywide Landfill
500k AST Valve Building - Valve Position Guide

Forcemain No.	Flow From:	Valve Numbers		Flow to:
		V 1	V 2	
1	Southwest Lift Station and Cells 5A/B, 5C/D	X	O	East 500k AST
1	Southwest Lift Station and Cells 5A/B, 5C/D	O	X	West 500k AST
		V 3	V 4	
2	Southwest Lift Station and Cells 5A/B, 5C/D	X	O	East 500k AST
2	Southwest Lift Station and Cells 5A/B, 5C/D	O	X	West 500k AST
		V 5	V 6	
3	Cells 7, 8A and 8B	X	O	East 500k AST
3	Cells 7, 8A and 8B	O	X	West 500k AST
		V 7	V 8	
4	Cell 3 and East sump	X	O	East 500k AST
4	Cell 3 and East sump	O	X	West 500k AST
		V 9	V 10	
5	North Area Lift station	X	O	East 500k AST
5	North Area Lift station	O	X	West 500k AST
		V11	V12	
6	North Area Lift station	X	O	East 500k AST
6	North Area Lift station	O	X	West 500k AST
		V13	V14	
7	Cells 2 North and 2 South	X	O	East 500k AST
7	Cells 2 North and 2 South	O	X	West 500k AST
		V15	V16	
8	Cell 16	X	O	East 500k AST
8	Cell 16	O	X	West 500k AST
		V17	V18	
9	Future Cell 12	X	O	East 500k AST
9	Future Cell 12	O	X	West 500k AST
9	Future Cell 12	X	X	Closed until put in service

Valve position: O=Open X=Closed
Start up valve postions
Valves to be 100% open or closed

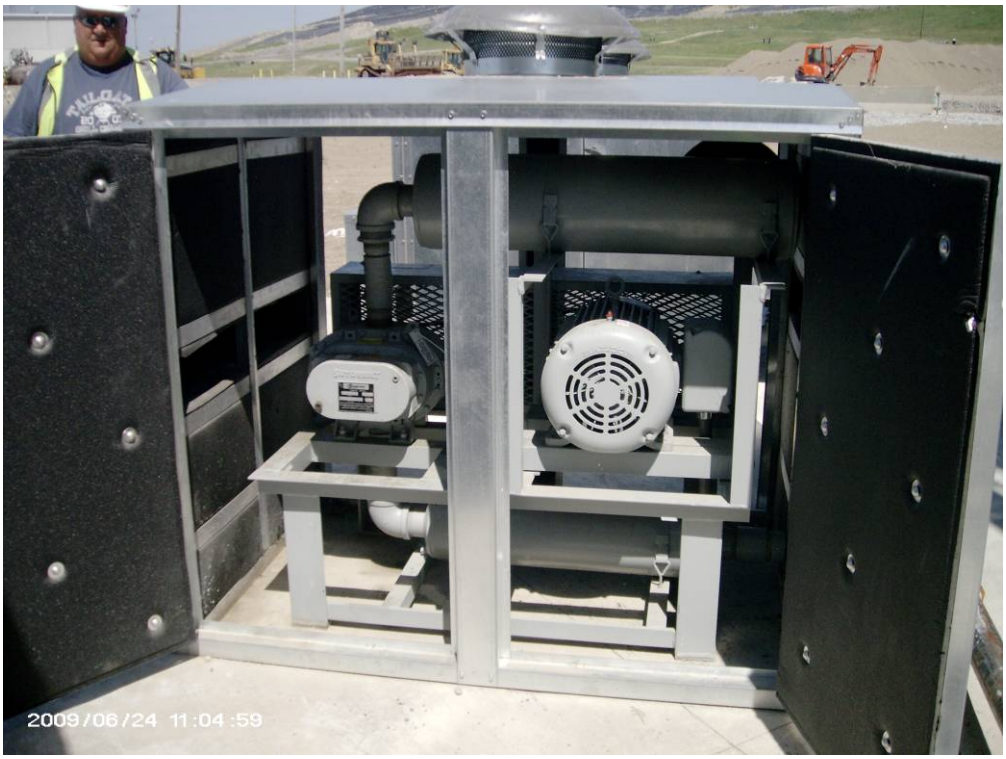
NOTE: 500k AST VALVE BUILDING VALVING WILL BE NUMBERED CONSISTENT WITH THIS TABLE WHEN CONSTRUCTION IS COMPLETE

Aeration Operation Picture Log

Aeration Picture 1 - Aeration Blower Paks at 500k AST-West.

Aeration Picture 2 – Internal view 1 of Aeration Blower Pak.

Aeration Operation Picture Log



Aeration Picture 3 – Internal view 2 of Aeration Blower Pak.

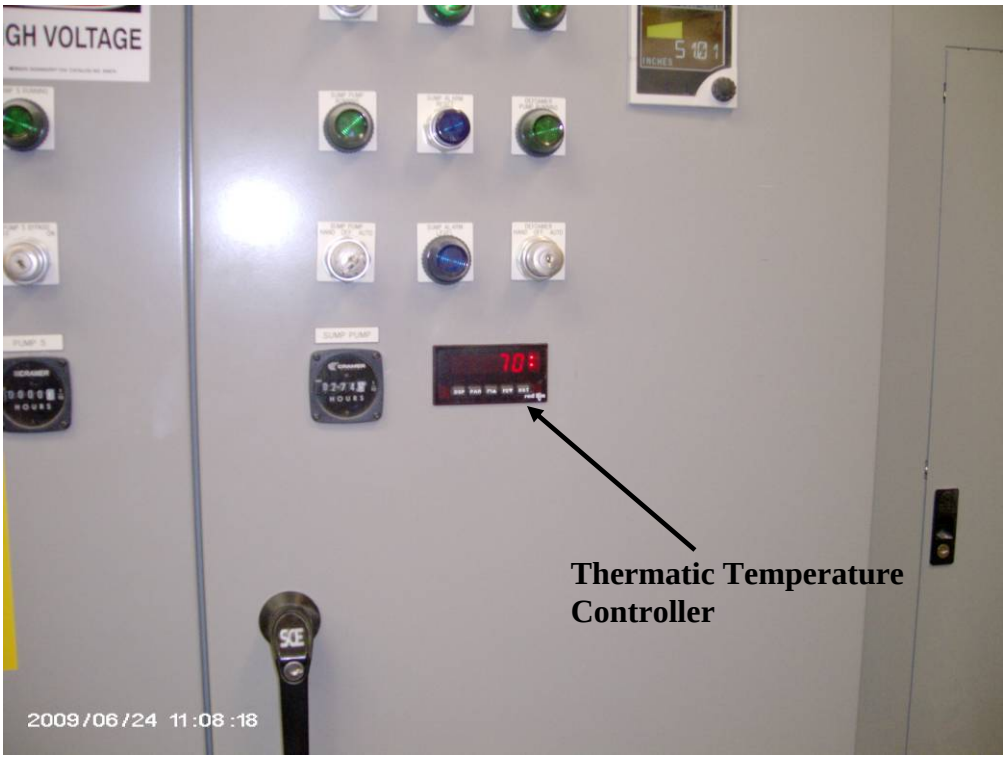
Aeration Picture 4 – Aeration Blower Pak control panels mounted on side of 500k AST Pump House. HOA switch control located here.

Aeration Operation Picture Log

Aeration Picture 5 – Close up of Blower Pak Control Panel.

Aeration Picture 6 – Main control panel inside 500k AST Pump House. Thermatic Temperature Controller located here.

Aeration Operation Picture Log



Aeration Picture 7 – Aeration Blower Pak Thermatic Temperature Controller showing readout of leachate temperature.

APPENDIX F

Defoamer Material Application Procedures

APPENDIX F

Defoamer Material Application Procedures

Description – The leachate defoaming system consists of a 275-gallon tote tank to hold the defoaming solution located in the 500k AST pump house building, a positive displacement chemical feed pump to inject the solution into the 500k ASTs, and a control panel which causes the feed pump to operate at set time intervals. Mitfloc 5506L (or equivalent) is the defoaming agent used. **Photo Log F** is attached for reference, along with a Material Safety Data Sheet for the Mitfloc 5506L.

Operation – When the operator has determined excessive foam is interfering with the leachate system's operation, the defoaming system is placed into operation. Foam interference can manifest in several ways. Some typical foam interference problems are listed below.

- Foam can interfere with the tank level control sensors resulting in erroneous or level indications which are not consistent when compared between independent systems i.e. level indicated by sliding scale does not agree with digital reading from liquid level indicator.
- Foam can reduce storage volume in both the storage tank and tanker trucks.
- Foam can cause pumps to cavitate.

Warning: The totes and lines that transfer the solution into the tanks or sumps must be heat traced and insulated, because the defoaming product freezes at 46ºF.

The operating procedure is described below:

The Mitfloc 5506L has a mix ratio of 1.8 gallons of product to 10,000 gallons of leachate.

- The SWLS has a through put volume of 15-20,000 gallons of leachate a day, and requires 3.6 gallons of defoaming agent.
- The NALS has a through put volume of 25,000 gallons a day, and requires 4.5 gallons of defoaming agent.
- The East 500k AST has a through put volume of 20,000 gallons a day, and requires 3.6 gallons of defoaming agent.
- The West 500k AST has a through put volume of 60,000 gallons a day, and requires 11.4 gallons of defoaming agent per day. Even though some of this leachate has already been treated, it has been sent through a pump again and may get agitated.

Set Injection feed rate by following the following procedure.

1. Determine pump flow rate by turning the pump on and measuring the flow rate into a five gallon bucket.
2. Adjust pump to a .5 gpm flow rate and set repeat cycle timer to OFF 25 minutes and ON 5 minutes. This will deliver 120 gallons of liquid per day. Adjust the pressure relief valve using trial and error until 1 gallon is delivered per minute of run-time.
3. Subtract 2.3 times the required daily dose of defoamer from 275, add the defoaming agent and fill the tank to 275 gallons with water and you will have a 2.3 day supply of defoaming mix.

Example:

1. The West 500k AST handles 60,000 gallons of leachate per day and requires 11.4 gallons of defoamer. To set up the tank add 26 gallons of defoaming agent (11.4 X 2.3 ≈ 26) and 249 gallons of water (275 – 26 ≈ 249).

2. Using bucket, transfer calculated gallons of Mitfloc 5506L defoaming agent from bulk dispensing vessel to the mixing tank. See example above.

3. Load tote tank with calculated gallons of fresh water from hose. Introduction of water will mix the solution. See example above.

4. Connect the feed hose to the tote outlet cam-lock coupler.

5. Open the tote tank outlet valve.

6. Open the hand valve located on the outlet side of the feed pump.

7. Plug the feed pump into the dedicated power receptacle which is controlled by the timer located in the main control panel.

8. Turn the timer to Auto. For example above, settings should be OFF 25 min ON 5 min.

9. The feed pump will empty the tote tank in approximately 2 days 8 hours based on a .5 gpm delivery rate.

10. Refill the tote tank and reset the timer as needed.

By adjusting the run-time and out put of the feed pump, the solution can be introduced at varying rates. To minimize waste, the flow rate needs to be checked monthly along with leachate through put volumes to calibrate the injection pump flow rate. Refer to example above and tank dosage rates provided in the *Description* section above for calibration procedure.

The above example procedure is written to describe the defoaming system located at the 500k ASTs but can be applied to remote defoaming system located at the SAST, NAST, and lift stations.

Material Safety Data Sheet

Section I

Product Name	**MITFLOC 5506L**		
Emergency Telephone No.	**(616) 241 - 4684**	Date Issued	**3/27/2009**
Manufacturer's Name and Address	**Mitco, Inc. 1601 Steele S.W. Grand Rapids, MI 49507**	Supersedes	**5/25/2007**
		Chemical Family	**Organic Mixture**
Hazardous Material Description, Shipping Name Hazard Class, Hazard ID No.(49 CFR 172.101)	**None**		

Section II – HAZARDOUS INGREDIENTS

		Listed as Carcinogen or Potential Carcinogen						Reporting Required
Chemical Name	CAS Registry Number	National Toxicology Program	I.A.R.C. Mono-graph	OSHA	OSHA Permissible Exposure Limit	ACGIH Threshold Limit Value	Other Exposure Limit	Sec. 313 of Title III And 40CFR 372
Oil Mist, Mineral		No	No	No	N/A	5mg/m³	STEL = 10mg/m³	No

Section III – PHYSICAL DATA

Boiling Point (°F)	**>210**	Specific Gravity (H2O = 1)	**0.8-0.9**
Vapor Pressure (mm Hg)	**<0.01 @ 20°C**	Percent, Volatile By Volume (%)	**N/A**
Vapor Density (AIR = 1)	**>5**	Evaporation Rate (N-Bu. Acetate =1)	**<0.01**
Solubility in Water	**Negligible**	pH	**N/A**
Appearance and Odor	**Pale yellow liquid with mild odor.**		

Section IV – FIRE AND EXPLOSION HAZARD DATA

Flash Point (°F)	**> 200**	Flammable Limits	LEL	**N/A**
Method Used	**Pensky-Martens CC**		UEL	**N/A**
Extinguishing Media	**Carbon dioxide, foam or water spray.**			
Special Fire Fighting Procedures	**Use water spray to keep fire-exposed container cool.**			
Unusual Fire and Explosion Hazards	**Use supplied-air breathing equipment for enclosed or confined spaces.**			

Section V – HEALTH HAZARD DATA

Primary Routes of Entry	Inhalation	No	Skin Contact	Yes	Eyes	Yes
Effects of Overexposure	Possible irritation to skin and eyes. Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of the material from eyes, skin, and clothing. Do not inhale fumes.					
Emergency and First Aid Procedures	In case of contact with skin, wash at once with soap and water. For eyes, flush with water for at least 15 minutes and get medical attention. Wash contaminated clothing before reuse. If inhaled, remove to fresh air; administer oxygen as required.					

Section VI – REACTIVITY DATA

Chemical Stability	Stable	Hazardous Polymerization	Will not occur
Conditions to Avoid	N/A		
Incompatibility (materials to avoid)	None known.		
Hazardous Decomposition Products	Thermal decomposition or combustion may produce oxides of carbon.		

Section VII – SPILL OR LEAK PROCEDURES

Steps to be taken in Case Material is Released or Spilled	Recover free product. Add sand, earth or other suitable absorbent to spill area. Minimize breathing vapors. Minimize skin contact. Open all windows and doors. Keep product out of sewers and watercourses by diking or impounding. Advise authorities if product has entered or may enter sewers, watercourses, or extensive land areas. Assure conformity with applicable government regulations.
Waste Disposal Method	All recovered material should be packaged, labeled, transported and disposed or reclaimed in conformance with applicable laws and regulations and in conformance with good engineering practices. Avoid land filling of liquids. Reclaim where possible.

Section VIII – SPECIAL PROTECTION INFORMATION

Respiratory Protection	Not normally necessary.						
Ventilation		Local Exhaust	N/A	Mechanical (General)	Adequate	Special	N/A
Eye Protection	Chemical goggles						
Protective Gloves	Rubber						
Other Protective Clothing or Equipment	Rubber boots and apron if contact appears likely.						

Section IX – SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storage	N/A
Other Precautions	N/A

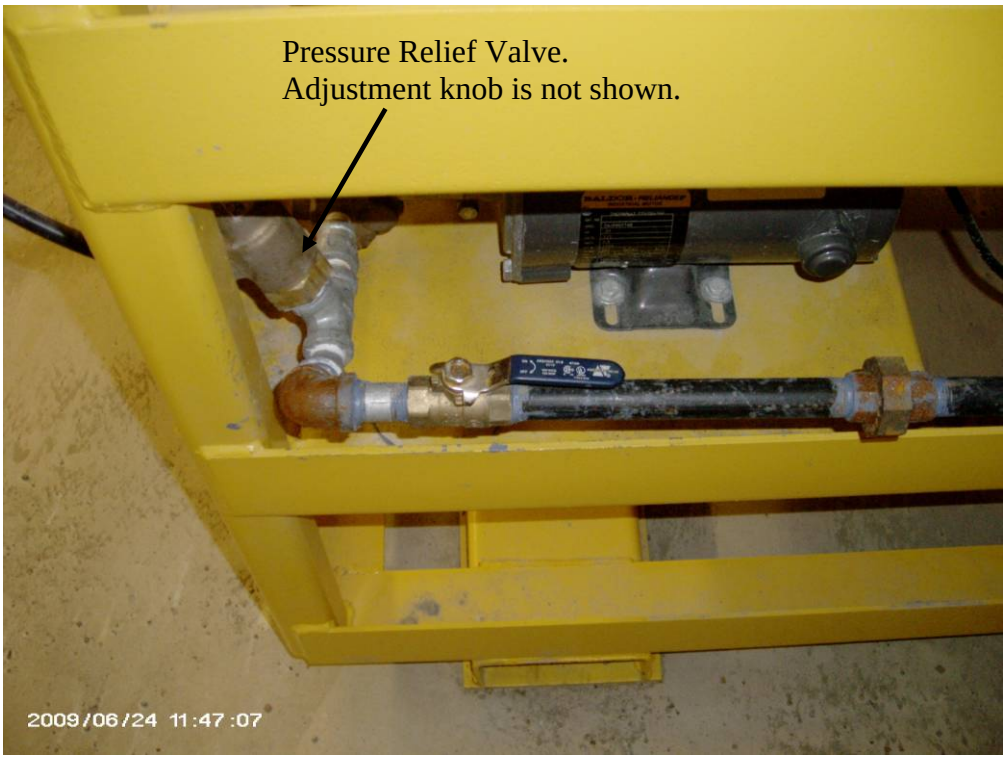
Defoamer Operation Picture Log

Defoamer Picture 1 – Mitfloc 5506L defoaming agent and transfer bucket. This station is moved inside the 500k AST Pump House during winter.

Defoamer Picture 2 – 275 gallon tote tank mixing vessel. Water supply valve is shown in corner on right side of picture.

Defoamer Operation Picture Log

Defoamer Picture 3 – Feed hose cam lok connection and tote outlet valve.



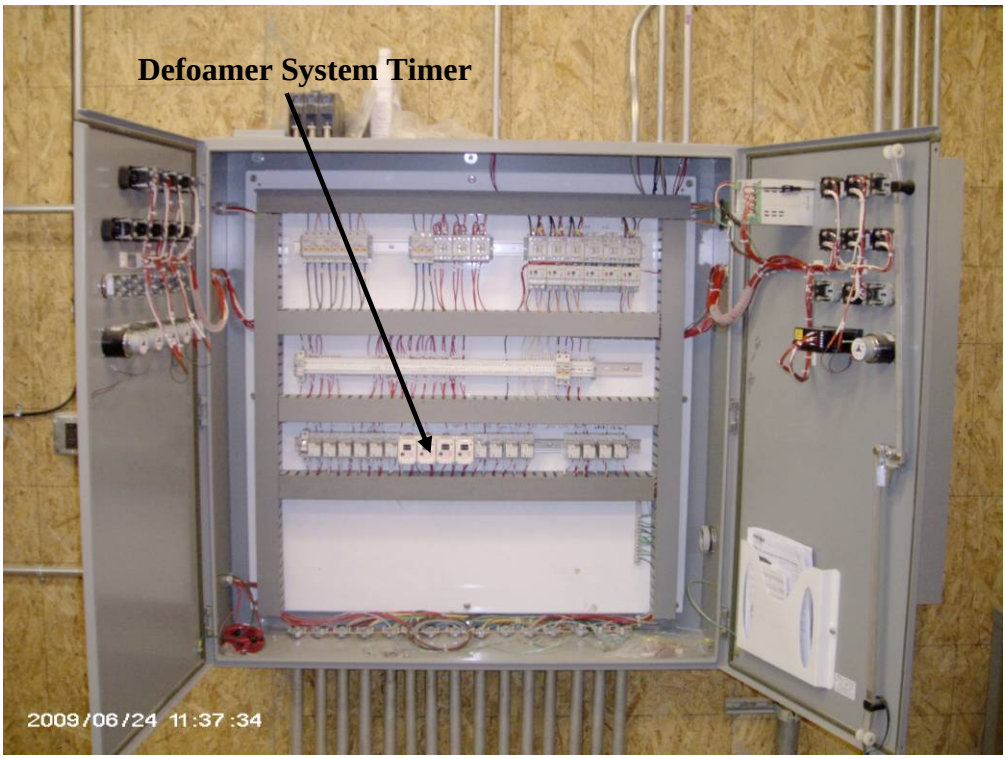
Defoamer Picture 4 – Hand valve on outlet side of feed pump.

Defoamer Operation Picture Log

Defoamer Picture 5 – Dedicated timer controlled power receptacle for defoamer chemical feed pump. Timer control located in main control panel in 500k AST Pump House.

Defoamer Picture 6 – Feed pump timer located inside this panel.

Defoamer Operation Picture Log



Defoamer Picture 7 – Location of defoamer system chemical feed pump timer control (furthers timer to right. Set pump run time here.

APPENDIX G

Leachate Storage Tank Loadout Procedures

APPENDIX G

Leachate Storage Tank Load-Out Procedures

The following procedure can be used as a guide for training truck drivers engaged in hauling leachate off from the Site.

Figure 3-6 shows the location of the 500k AST Loadout Pad. **Figure 3-20** shows a more detailed view of the 500k AST Loadout Pad. Reference pictures can be found in **Photo Log G**.

1. Obtain inbound tare weight for truck and tanker trailer.
2. Drive truck to the Dual 500k AST compound, and enter the load-out pad from the west end and select a loading bay.
3. Position tanker trailer completely on the load-out pad. This will ensure the load-out proximity switch is satisfied to activate the pump control interlock and if any spills occur it will be contained on the pad.
4. Set the air brake on the tractor trailer rig.
5. Don personal protection equipment (PPE). Follow Health and Safety Plan (HASP) procedures for proper protection.
6. Connect transfer hose from load-out station to receiving valve on tanker trailer and open tanker inlet valve.
7. Open Manual Operator valve corresponding with the proper load-out station located on the South side of the corresponding 500k AST. The attached **Table G.1 – 500k AST Loadout Valves** provides a guide to leachate loadout operation valve operation.
8. Check hose connections at load-out station and tanker trailer.
9. Using Operators Key, initiate leachate transfer by turning on the pump at the load-out station control panel.
10. Inspect hose connections for leaks.
11. Note problems with equipment or leaks observed during loading on the manifest form and contact OM&M personnel.
12. Observe tanker filling and shut off pump when liquid reaches a point determined by the truck driver.
13. Close transfer valves.
14. Disconnect hoses carefully and allow them to drain into the drain of the containment pad.
15. Install safety caps on tanker coupling.
16. Check for leaks.
17. Close Manual Operator valve on 500k AST.
18. Complete load transfer paper work leave copy at scalehouse.
19. Deodorize truck and any spillage with deodorant if leachate was sprayed onto rig or not directly into drain during loading.
20. Return to scale and perform the following:
    a. Determine gross weight.
    b. Complete manifest with shipping weight and departure time.
    c. Leave (color) copy of manifest with scale operator.
    d. Perform load adjustment, if required.
        1) Too much
            a) Return to 500k AST load-out bay

b) Slowly release appropriate amount of leachate into containment pad drain

c) Close valves and check for leaks

d) Return to scale

2) Too little

a) Return to 500k AST load-out bay

b) Load additional leachate following steps 4 - 20

c) Return to Scale

21. Proceed to truck wheel wash

22. Drive safely to receiving destination and follow treatment plant procedures.

REPORT ANY LEAK OR SPILL ON-SITE OR OFF-SITE NOT CONTAINED ON THE LOAD-OUT BAY PAD TO: Jim Steigerwald or Mike Darnell

CONTACT INFO:

Steigerwald, James
[JSteigerwald@republicservices.com]
Cell phone # (330)-447-7031

Mike Darnell
Mdarnell@republicservices.com
Cell phone (502) 803-6573

TABLE G.1
Countywide Landfill
500k AST Loadout Valves

NOTE: Valve #'s 1 - 5 are located on the West 500k AST, and 6 - 8 are located on the East 500k AST

Desired Loadout Flow From:	3-way valve position flow from:	Valve Position								Flow Directed To:	Pump indicator Switch Selected
		V 1	V 2	V3	V 4	V 5	V 6	V 7	V 8		
West 500k AST	West Tank	O	X	X	X	X	X	X	X	Loadout pad # 1	West 500k AST
West 500k AST	West Tank	X	O	X	X	X	X	X	X	Loadout pad # 2	West 500k AST
West 500k AST	West Tank	X	X	O	X	X	X	X	X	Loadout pad # 3	West 500k AST
East 500k AST	East Tank	X	X	X	X	X	O	X	X	Loadout pad # 1	East 500k AST
East 500k AST	East Tank	X	X	X	X	X	X	O	X	Loadout pad # 2	East 500k AST
East 500k AST	East Tank	X	X	X	X	X	X	X	O	Loadout pad # 3	East 500k AST
West 500k AST Pump 4	N/A	X	X	X	O	X	X	X	X	East 500k tank	N/A
West 500k AST Pump 5	N/A	X	X	X	X	O	X	X	X	East 500k tank	N/A

Valve position: O=Open X=Closed

Valves are only to be opened during loadout procedures for filling a tanker or transferring into the East tank.

Note: The 3-way valves are to be locked into position and the corresponding pump indicator switch selected on the Main Control Panel.

Loadout Procedures Picture Log

Loadout Picture 1 – 500k AST loadout bays viewed from east end, enter bay here.

Loadout Picture 2 – Tanker truck parked entirely on loadout pad.

Loadout Procedures Picture Log

Loadout Picture 3 – 500k AST loadout station 3 of 3 and transfer hose. Operator's key switch located here.

Loadout Picture 4 – 500k AST loadout transfer hose.

Loadout Procedures Picture Log

Loadout Picture 5 – Tanker transfer inlet valve (tanker valve locations may vary).

Loadout Picture 6 – Location of Manual Operator Valve. Open to allow flow to loadout pump corresponding with occupied loadout bay.

Loadout Procedures Picture Log

Loadout Picture 7 – 500k AST Transfer Pumps. Three-way valves used to select flow from 500k AST-West or 500k AST-East will be located here.

Loadout Picture 8 – 500k AST. Driver leaves copy of completed manifest here.

Loadout Procedures Picture Log

Loadout Picture 9 – 500k AST. Deodorizer and spray pump located here.

APPENDIX H

Leachate Loadout Bay Pump Operating Procedures

APPENDIX H

Leachate Loadout Bay Pump Operating Procedures

This procedure outlines the operation of the 500k AST leachate loadout pad sump operation

The leachate loadout pad consists of three concrete bays sufficiently sized to contain the entire contents of a full tanker trailer during transfer operations. The pad has concrete curbs and slopes to the center of each bay. Each truck loadout loading bay has a catch basin to collect leachate accidentally released during tanker truck transfer operations. See **Figure 3-19** and **Figure 3-20**. These catch basins drain to the Truck Loadout Sump (TLS). Released leachate and contact water captured in the loadout bays accumulate in the TLS. An automated submersible pump transfers the accumulated leachate back to the West 500k AST.

A summary of the TLS operation is provided below:

Operating Sequence

1. One gravity line connecting the three catch basins drains leachate from the loadout bays into the TLS wet well.
2. Leachate fills the wet well until a float switch starts a submersible pump which pumps leachate to the West 500k storage tank. An Endress-Hauser (or equivalent) liquid level controller with a pressure transducer is used as a redundant pump control which also gives a digital readout of leachate level in the sump.

Control Features

1. The simplex pump station has a single 125 gpm pump (Stancor Model No. SS300 or equivalent (Manufacturer literature and operations guide are in **Appendix D**). The pump has its own forcemain which pumps into the West 500k AST.
2. Wet well is equipped with redundant liquid level controls to turn pump on, off, or signal high alarm. The redundant control system consists of primary Endress-Hauser liquid level controller and a Geotech pressure transducer and secondary float switches.

Capacity Between On, Off and High Alarm

1. Pump OFF liquid elevation equals 2 feet AFF. Liquid level controller is set at 24 inches AFF.
2. Pump ON liquid elevation equals 6 inches below inlet elevation. Liquid level controller is set at 6 inches below inlet elevation.
3. High alarm liquid elevation equals 9 inches above pump ON float elevation. Liquid level controller is set at 9 inches above pump ON float switch.
4. Wet well inside diameter is six feet.
5. Wet well capacity equals 225 gallons per foot of liquid. 788 gallons of leachate are transferred between pump ON and pump OFF set points. Reserve capacity is 150 gallons between pump ON and high alarm liquid levels.
6. Influent flow is from rain surface on loadout pads, weep holes in the leachate transfer lines which allow the lines to back drain and not freeze in the winter, and any spills onto the loadout pad.

Start Up and Shut Down Sequence

1. Under normal operating procedures, leachate or rain water enters the sump through a gravity inlet at elevation 1,130.33'. The pump OFF float energizes as liquid rises to elevation 1,126.33' above mean sea level (amsl), from that point, it takes approximately 800 gallons to reach the pump ON float at elevation 1,129.83' amsl and turn on the pump. The pump sends leachate through the force main to the West 500k AST at a rate of 125 gpm. At this rate, the pump should move the liquid down in approximately 6 minutes, where the float should open and shut off the pump and begin the cycle again. The floats should be set to operate before the liquid level controller. The liquid level controller transducer should be set 2 feet off the sump floor, allowing the operator to visually observe the floats operate the system.

Inspection – The Truck Loadout Sump should be inspected when the 500k AST inspection is performed. Inspection procedures are provided on the **500k AST Inspection Form** located in **Appendix L**.

APPENDIX I

Cell Floor Pump Maintenance Procedures

APPENDIX I

Cell Floor Pump Maintenance Procedures

Pull and replace whenever indicated by either motor overload failure (indicator light on control panel) or motor running but no liquids being pumped. Refer to Trouble Shooting guide in Grundfos Pump Manufacturer's literature in **Appendix D**.

Step	Procedure
1.	Isolate cell sump from leachate conveyance system by closing valve(s) identified in **Table A.2** located in **Appendix A**.
2.	Isolate cell sump from gas collection system by closing valve(s) identified **on the GCCS as-built plans**.
3.	Isolate power at location identified in **Table A.2** located in **Appendix A**, and establish lock-out, tag-out (LOTO) in accordance with the Site's Health and Safety Plan (**HASP)**.
4.	Open riser access cover by removing ring bolts or latch holding access port.
5.	Break leachate pump discharge pipe or hose at the cam lock connection.
6.	Manually pull pump and discharge pipe from the cell riser being careful to pull power cord and transducer cords at same extraction rate.
7.	Disconnect the pump from the discharge pipe and cut the power supply wires above (down stream) of the existing splice.
8.	Inspect discharge pipe. Replace if loss of integrity is suspected.
9.	Attach new pump to discharge line using all new hardware.
10.	Splice wires following directions in splice kit.
11.	Complete **Checklist I.1 - Pump Replacement Form** attached

CHECKLIST I.1
Countywide Landfill
Pump Replacement Form

	Fill In Data Requested		Comment
Control Number:			
Date:			
Requested by:			
Replaced By:			
Pump Location:			
Reason for replacement:			
Old pump model #:			
Motor HP:			
Voltage:			
Phase:			
New pump model #:			
Motor HP:			
Voltage:			
Phase:			
New power cord?	**Yes ☐**	**No ☐**	
Checked rotation?	**Yes ☐**	**No ☐**	
Running AMPs-			
Running Volts			
Replaced Transducer ?	**Yes ☐**	**No ☐**	
Replaced thermocouple?	**Yes ☐**	**No ☐**	
Fill out paper work?	**Yes ☐**	**No ☐**	

Notes:

Signature: _____

APPENDIX J

Leachate Collection Pipe Maintenance Procedures

Countywide RDF Leachate Collection Line Inspection

Contractor Verification Form

Date: _____

Contractor Name:_____

Cell	Pipe #	Field Length FT (Based on As-built Data Lengths)	Verified Length FT (Certified Free and Clear of Debris)
1	1A	578	
	1B	619	
	1C	635	
	1D	660	
	1E	382	
2	2A	713	
	2B	747	
	2C	759	
	2D	724	
	2E	512	
3	3A	846	
	3B	589	
	3C	859	
	3D	705	
4	4A	842	
	4B	822	
	4C	987	
	4D	1171	
	4E	1000	
5	5A/B	1217	
	5C/D	1143	
6	6A	801	
	6B	878	
	TOTAL	18,189	

APPENDIX J

Leachate Collection Pipe Maintenance Procedures

The intent of pipe cleaning is to remove foreign materials from the lines and restore the pipe to near the original carrying capacity. It is recognized that there are some conditions such as broken or damaged pipe and major blockages that prevent cleaning from being accomplished or where additional damage would result if cleaning were attempted or continued. Should such conditions occur, the operator will contact the OM&M Manager personnel before proceeding.

Choose the right nozzle for the job. This decision is based on several different factors such as amount of flow, pipe type, pipe size, and condition of the lines. The operator must also pick the appropriate fins to mount the nozzle onto. The operator, or helper, will drop down enough rodder hose slack to be able to place the nozzle in the mouth of the pipe with the tiger tail at the top of the pipe to keep from tearing the rodder hose. Turn the water pressure on efficient enough to shoot the nozzle in until the end of the leader hose is showing in the mouth of the pipe. At this time, clear the footage counter and set it to zero so the footage can be measured properly.

In general, a 15 degree nozzle is used for high grade, long lines and when penetrating blockages. A 30 degree nozzle is best for cleaning due to the jets of water hitting the wall more directly and closer to the nozzle.

Allow hose to feed itself through the line at a moderate pace. It may be best to feed hose about 30 feet and return, then 50 feet and return and 25 feet and return until end of run, if line is tightly packed. Continue to jet the line until nothing but clear water comes through the line while bringing the nozzle back to the starting position.

When reaching the end of the run, pull the hose back by reversing direction of the control valve lever. If the line is clean, minimum water pressure is needed. When the nozzle returns to the point of entry, lower pressure completely by reducing engine RPM using the throttle control on reel frame. Disengage the auxiliary motor and return the tubes to the racks and place the boom back into transport position.

The cell floor leachate collection lines and cleanout access points are shown on **Figure 3-3**. Other subcap drain features and associated cleanout access points are shown on **Figure 3-9**. Jet-rodding frequency shall be as follows:

Cell Floor Collection Pipes..... Quarterly
Subcap Drains..... Semi-Annually
Toe Drains (TDs)..... Quarterly
Deep Trench Drain (DTD)..... Semi-Annually

APPENDIX J

Specific precautions are provided below.

Precaution	Procedure
1	Provide containment by constructing temporary berms and deploying plastic sheeting if back flow is expected.
2	When jetting down gradient, verify receiving structure and control valves are in ready position to receive jet flow.
3	Vacuum the expressed liquids as they discharge.
4	Vacuum up remaining liquid expressed from cleanout.
5	Excavate impacted soil and place in landfill working face.

In addition to keeping the pipes open, an important function of the jet-rodding process is to verify the pipes are open throughout their entire length. The operator will note the maximum distance attained and record it in the form next to the known, constructed length. An example of the records to be kept is attached (form that has been used historically for jet-rodding the cell floor leachate collection lines at the site). If a large disparity between attained length and constructed length is observed, the OM&M Manager will be notified for further direction.

APPENDIX K

Leachate Transmission Force Main Maintenance Procedures

APPENDIX K

Leachate Transmission Force Main Maintenance Procedures

- Jet-rod all force mains annually.
- Check secondary containment witnesses before and after the line has been jet rodded. If liquid is detected in the interstitial space of the dual contained forcemain, conduct a leak test per the guidance attached.
- If line fails the hydrostatic or pneumatic pressure tests, expose the leak or rupture. Repair or replace the damaged or suspect segment of line and conduct pressure test again before covering the pipe or placing it back in service.
- Follow established construction quality assurance (CQA) procedures outlined in Volume 1 when replacing or repairing pipe.

Technical Note 802 – Leak Testing of Polyethylene Pipe For Municipal and Industrial Applications

Part 1 – Pre-Test Considerations

Leak testing may be used to find leaks in a newly constructed or newly modified piping system, or in an established system where an apparent loss of integrity has been experienced. If they exist, leaks typically occur at joints or connections in the system.

Leak testing does not verify pressure rating or potential long-term performance. The system design and the pressure ratings of the installed components are the sole determinants of system pressure rating and long-term performance.

For M&I applications, leak testing of pressure piping systems is done by filling with a liquid and applying a pressure. Pneumatic (air) testing of pressure piping systems is not recommended.

Leak testing is described in ASTM F2164, "Standard Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Hydrostatic Pressure."

Safety

Safety is of paramount importance. Leak tests can apply high stress to untried joints and parts in the system. Failure can occur by leaking or by catastrophic rupture that can cause sudden, violent movement. In some cases, leakage may immediately precede catastrophic rupture.

WARNING – Death or serious injury and property damage can result from failure at a joint or connection during pressure leak testing. Keep all persons a safe distance away during testing. The test section is to be supervised at all times during the test.

Ensure that all piping is restrained against possible movement from catastrophic failure at a joint or connection. When pressurized, faulty joints or connections may separate suddenly causing violent and dangerous movement of piping or parts. Correctly made joints do not leak. Leakage at a joint or connection may immediately precede catastrophic failure. Never approach or attempt to repair or stop leaks while the test section is pressurized. Always depressurize the test section before making repairs.

Restrain Against Movement

Before applying pressure, all piping and all components in the test section must be restrained. This means that if piping or parts move or separate during the test, it will not result in damage or injury. ***Never conduct leak tests on unrestrained piping.***

- Heat fusion joints must be properly cooled before testing.
- Mechanical connections must be completely installed and tightened per manufacturer's instructions.
- If backfill provides restraint, it must be properly placed and compacted. Joints and connections may be exposed for inspection.
- End closures must be suitable for pressure service and pressure-rated for the test pressure.
- Ensure that all connections to test equipment are secure. Disconnect or isolate all low pressure filling lines and all other parts that are not to be subjected to test pressure. Restrain, isolate or remove expansion joints before leak testing.

Test Section

Testing may be conducted on the full system or in sections. Test section length is determined by the capacity of the testing equipment. Lower capacity pressurizing or filling equipment may not be capable of completing the test within permissible time limits. If so, use higher capacity test equipment or select a shorter test section.

Before applying test pressure, allow time for the test fluid and the test section to equalize to a common temperature.

Test Pressure

For pressure piping systems that include polyethylene pipe or fittings:

- The maximum permissible test pressure is measured at the lowest elevation in the test section.
- The maximum permissible test pressure is the lower of (a) 150% of the system design operating pressure provided that all components in the test section are rated for the test pressure, or (b) the pressure rating of the lowest pressure rated component in the test section.

For leak testing purposes, the maximum allowable test pressure in polyethylene pipe is 150% of the pipe's design pressure rating for the application and the application service temperature.

Do not subject lower pressure rated, non-polyethylene parts or devices to pressures above their pressure rating. Lower pressure rated parts may be removed or isolated from the test section to avoid damage or failure. Vent isolated parts or equipment to atmosphere.

All thermoplastic pipes have reduced strength at elevated temperature. Test pressure must be reduced when the test section is at elevated temperature either from service conditions or from environmental conditions such as being warmed by the sun. Multiply the test pressure by the Table 1 multiplier to determine the allowable elevated temperature test pressure.

Table 1 Elevated Temperature Multiplier

Test Section Temperature °F (°C)	≤ 80 (≤ 27)†	≤ 90 (≤ 32)	≤100 (≤ 38)	≤110 (≤ 43)	≤ 120 (≤ 49)	≤ 130 (≤ 54)	≤ 140 (≤ 60)‡
Multiplier	1.00	0.90	0.80	0.75	0.65	0.60	0.50
† Use the 80°F (27°C) multiplier for 80°F (27°C) and lower temperatures. ‡ The maximum service temperature for Performance Pipe PE pressure piping is 140°F (60°C).							

Test Duration

When testing at pressures above system design pressure up to 150% of the system design pressure, the maximum test duration is eight (8) hours including time to pressurize, time for initial expansion, time at test pressure, and time to depressurize the test section. If the test is not completed due to leakage, equipment failure, or for any other reason, depressurize the test section completely, and allow it to relax for at least eight (8) hours before pressurizing the test section again. *CAUTION – Testing at excessive pressure or for excessive time may damage the piping system.*

When testing at system design pressure or less, test duration including time to pressurize, time for initial expansion, time at test pressure and time to depressurize should be limited to a practical time period given that the test section is not to be left unsupervised at any time during leak testing.

April 2006 Supercedes all previous publications

Test Fluid

Hydrostatic Testing

The test liquid should meet appropriate industry standards for safety and quality so that the environment, system, test equipment and disposal (if necessary) are not adversely affected. The recommended test liquid is water.

Pneumatic Testing

WARNING – Death or serious injury. Failure during a pneumatic (compressed gas) leak test can be explosive and result in death or serious bodily injury.

If failure occurs when using compressed gas as the test fluid, the failure releases the energy applied to stress the piping system, and the energy applied to compress the gas. Such failure can be explosive and dangerous. Compared to hydrostatic testing, pneumatic testing can be more dangerous because failure during pneumatic testing releases more energy. For safety reasons, pneumatic testing is not recommended.

Part 2 – Leak Testing Procedures

Read all of this publication and observe all safety precautions before conducting any leak test.

Hydrostatic Leak Testing

This hydrostatic leak test procedure consists of filling, an initial expansion phase, a test phase, and depressurizing. There are two alternatives for the test phase.

Filling

Fill the restrained test section completely with test liquid.

WARNING – Ensure that there is no air trapped in the test section. Failure with entrapped air can result in explosive release and result in death or serious bodily injury. Use equipment vents at high points to remove air.

Initial Expansion Phase

Gradually pressurize the test section to test pressure, and maintain test pressure for three (3) hours. During the initial expansion phase, polyethylene pipe will expand slightly. Additional test liquid will be required to maintain pressure. It is not necessary to monitor the amount of water added during the initial expansion phase.

Test Phase – Alternate 1

Immediately following the initial expansion phase, reduce test pressure by 10 psi, and stop adding test liquid. If test pressure remains steady (within 5% of the target value) for one (1) hour, no leakage is indicated.

Test Phase – Alternate 2

This alternative is applicable when the test pressure is 150% of the system design pressure.

Immediately following the initial expansion phase, monitor the amount of make-up water required to maintain test pressure for one (1), or two (2), or three (3) hours. If the amount of make-up water needed to maintain test pressure does not exceed the amount in Table 2, no leakage is indicated.

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Table 2 Test Phase – Alternate 2 – Make-Up Water Allowance

	Make-Up Water Allowance for Test Phase – Alternate 2, (U.S. Gal/100 ft of pipe)		
Nominal Pipe size (in.)	*1-Hour Test*	*2-Hour Test*	*3-Hour Test*
1-1/4	0.06	0.10	0.16
1-1/2	0.07	0.10	0.17
2	0.07	0.11	0.19
3	0.10	0.15	0.25
4	0.13	0.25	0.40
5-3/8	0.19	0.38	0.58
5	0.21	0.41	0.62
6	0.3	0.6	0.9
7-1/8	0.4	0.7	1.0
8	0.5	1.0	1.5
10	0.8	1.3	2.1
12	1.1	2.3	3.4
13-3/8	1.2	2.5	3.7
14	1.4	2.8	4.2
16	1.7	3.3	5.0
18	2.0	4.3	6.5
20	2.8	5.5	8.0
22	3.5	7.0	10.5
24	4.5	8.9	13.3
26	5.0	10.0	15.0
28	5.5	11.1	16.8
30	6.3	12.7	19.2
32	7.0	14.3	21.5
34	8.0	16.2	24.3
36	9.0	18.0	27.0
42	12.0	23.1	35.3
48	15.0	27.0	43.0
54	22.0	31.4	51.7

Low Pressure Air Testing of Gravity Flow Systems

For gravity flow and low or intermittent pressure applications such as sewer and odor control, leak testing in accordance with ASTM F 1417 is recommended.

Other Leak Tests

Low Pressure Air Testing of Gravity Flow Systems

For gravity flow and low or intermittent pressure applications such as sewer and odor control, leak testing in accordance with ASTM F 1417 is recommended.

Initial Service Leak Testing

An initial service leak test may be acceptable when other types of tests are not practical, or when leak tightness can be demonstrated by normal service, or when an opportunity is afforded by performing initial service tests of other equipment. An initial service leak test may apply to systems where isolation or temporary closures are impractical, or where checking out pumps and other equipment allows the system to be examined for leakage prior to full-scale operations.

The piping system should be gradually brought up to normal operating pressure, and held at normal operating pressure for at least ten (10) minutes. During this time, joints and connections may be examined for leakage.

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At the conclusion of the test, depressurize the test section by the controlled release of fluid from the test section. Controlled release avoids the potential for pressure surge.

Systems that are Not Suitable for Pressure Leak Testing

Some systems may not be suitable for pressure leak testing. These systems may not be designed or intended for internal pressure such as vacuum systems, or they may contain parts that cannot be isolated, or temporary closures to isolate the test section may not be practical.

Systems that are not suitable for pressure leak testing should not be pressure tested, but should be carefully inspected during and after installation. Inspections such as visual examination of joint appearance, mechanical checks of bolts and joint tightness, and other relevant examinations should be performed.

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Web: www.performancepipe.com

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APPENDIX L

Lift Station Maintenance Procedures

APPENDIX L

Lift Station Maintenance Procedures

Operation – The Lift station operation is discussed in **Appendix C.**

Inspection – Lift Station inspections should be performed as discussed in **Appendix C**.

Maintenance – Maintenance tasks and frequency pertaining to operation of the lift stations are outlined in **Table L.1 – Lift Station Maintenance Routine**. Maintenance performed should be documented on the attached **Checklist L.1 – Lift Station Maintenance.**

When the sediment buildup in either the grit chamber or wet well exceeds the maximum depth noted in Table L.1, the vessel should be cleaned out. Follow the procedure outlined below for cleaning the lift station.

Procedure for Cleaning lift Station wet wells

Note: Lift Station vessels are CONFINED SPACE by PERMIT ONLY!

Equipment required:

1	Vacuum truck with 3” vacuum hoses
2	Power spray washer
3	Boom lift
4	High power flashlight

Procedure:

1	Close all valves and secure all influent leachate flows.
2	Drain the wet well with pumps as far down as possible by operating them in Hand mode.
3	Disconnect power to pumps and implement Lock Out, Tag Out procedures from HASP
4	Disconnect the pump riser forcemain at cam locks inside the wet well
5	Pull the pump(s) with the boom lift and set aside for cleaning of inlet screen
6	Attach the vacuum truck 3” vacuum hose to the 3” cam lock fitting on the wet well for clean out
7	Connect the power sprayer discharge hose to the wet well cleaning nozzle quick disconnect port to provide washing action at the base of the vessel. This will help loosen debris
8	Begin vacuuming and washing trying to move debris to 3” vacuum line, continue until clean. Inspect with the flashlight
9	When wet well is clean, suspend the pump over the wet well and wash the pump inlet screen down with the pressure washer
10	reinstall pumps and connect to forcemain
11	Re power pump and open influent inlet lines
12	Check operation of pumps after wet well fills

TABLE L.1

Countywide Landfill
Lift Station Maintenance Routine

Task	Person	Task Description	Frequency
Valves[(1)]	Operator	With the pumps off, exercise all valves by opening and closing the valve twice through the entire valve cycle	Monthly
Floats	Operator	With the pumps off. Pull the floats from the lift station. Clean floats and verify operation by manually tilting the floats with the pumps in the "Auto" mode. Confirm manual manipulation of float results in proper pump control response. Reinstall floats. Replace if necessary	Monthly
Pump Intake[(1)]	Operator	Remove pumps and clean the intake screens.	Quarterly
Check valves[(1)]	Operator	With the pumps off. Isolate the check valves by closing the manual valves located adjacent to the check valve. Remove the check valve, disassemble, clean and verify free operation of the swing check gate or ball. Reassemble and reinstall. Open isolation valve and verify operation with the pumps on. Replace if the check gate, ball, or seat ring show signs of pitting and corrosion or if the hinge mechanism will not move freely or the shaft seal is leaking.	Semiannually
Generator	Operator	Exercise and follow routine maintenance procedures outlined in the generator manufacturer's manual located in **Appendix D**.	Monthly
Pump	Operator	Replace when failure has been confirmed. Always maintain a spare pump on site.	As needed
Sediment	Operator	Measure accumulation of sediment in grit chamber and wet well by checking with dipstick. If sediment exceeds 6 inches in wet well or 12 inches in grit chamber, mobilize vacuum truck to remove solids. Utilize fixed jet nozzle while solids are being removed. Pull pumps during cleaning and clean pump inlets.	Monthly
2nd Containment	Operator	Confirm integrity of primary vessels by checking for presence of liquid in secondary containment vessels. Open witness port and check with dip stick. Notify OEPA and provide schedule for inspection and repair if liquid is present and is determined to be rising by subsequent daily checks. Ensure that witness port is properly sealed after inspection as not to allow surface water to enter.	Monthly
Valve Building	Operator	Check for leaking valves. Confirm building heat is on during winter months to prevent freezing.	Daily
SWLS Emergency Overflow Tanks	Operator	Inspect tanks for leachate inside. If leachate is present find reason why? Verify the level is the same in all three tanks and remove leachate. Inspect heat trace on cross over piping is working in winter months. Check alarm float Monthly in tanks.	Daily

(1) These maintenance activities are intended to extend the life of these components and are not required for maintaining compliance as long as the component is replaced when it has failed.

CHECKLIST L.1
Countywide Landfill
Lift Station Maintenance

Date:
Performed By:

Southwest Lift Station Maintenance item	Frequency	Item Operational		Repairs Needed	Comments
With pump OFF, operate valves 100% open to 100% closed 2-3 times	Monthly	**Yes ☐**	**No ☐**		
Pull floats-Clean and test in AUTO mode	Monthly	**Yes ☐**	**No ☐**		
Observe Generator self test	Monthly	**Yes ☐**	**No ☐**		
Measure grit chamber for solids clean if more than 12 inches	Monthly	amount of solids____			
Measure wet well for solids if more than 6"-pull pumps and cleanout	Monthly	amount of solids____			
Check that heat trace is working	Monthly	**Yes ☐**	**No ☐**		
Pull pumps and clean inlet screen	Quarterly	**Yes ☐**	**No ☐**		
Isolate check valves clean and check operation replace if necessary	Semi-ann	**Yes ☐**	**No ☐**		
North Area Lift Station Maintenance item	**Frequency**	**Item Operational**		**Repairs Needed**	**Comments**
With pump OFF, operate valves 100% open to 100% closed 2-3 times	Monthly	**Yes ☐**	**No ☐**		
Pull floats-Clean and test in AUTO mode	Monthly	**Yes ☐**	**No ☐**		
Observe Generator self test	Monthly	**Yes ☐**	**No ☐**		
Measure grit chamber for solids clean if more than 12 inches	Monthly	amount of solids_____			
Measure wet well for solids if more than 6"-pull pumps and cleanout	Monthly	amount of solids_____			
Check that heat trace is working	Monthly	**Yes ☐**	**No ☐**		
Pull pumps and clean inlet screen	Quarterly	**Yes ☐**	**No ☐**		
Isolate check valves clean and check operation replace if necessary	Semi-ann	**Yes ☐**	**No ☐**		

If pump or other system is noted to be malfunctioning or deficient, note observation in "Comments" section. Corrections made to any malfunction noted on this page must be recorded on the back side of this form.

CHECKLIST L.1
Countywide Landfill
Lift Station Maintenance

Date:
Performed By:

Southwest Lift Station Maintenance item	**Corrections made to anything noted on page 1**
With pump OFF, operate valves 100% open to 100% closed 2-3 times	
Pull floats-Clean and test in AUTO mode	
Observe Generator self test	
Measure grit chamber for solids clean if more than 12 inches	
Measure wet well for solids if more than 6"-pull pumps and cleanout	
Check that heat trace is working	
Pull pumps and clean inlet screen	
Isolate check valves clean and check operation replace if necessary	
North Area Lift Station Maintenance item	**Corrections made to anything noted on page 1**
With pump OFF, operate valves 100% open to 100% closed 2-3 times	
Pull floats-Clean and test in AUTO mode	
Observe Generator self test	
Measure grit chamber for solids clean if more than 12 inches	
Measure wet well for solids if more than 6"-pull pumps and cleanout	
Check that heat trace is working	
Pull pumps and clean inlet screen	
Isolate check valves clean and check operation replace if necessary	

APPENDIX M

Leachate Storage Tank Cleaning and Maintenance Procedures

APPENDIX M

Leachate Storage Tank Cleaning and Maintenance Procedures

In addition to the daily monitoring conducted in accordance with routine inspection procedures presented in **Appendix A**, other periodic monitoring and maintenance should be performed at the storage tanks.

Inspections – The storage tanks should be inspected weekly. Weekly inspections should be conducted consistent with the attached **Checklist M.1 – Routine Storage Tank Inspection**. Corrective actions taken to address deficiencies noted in the inspection should be recorded on the back side of **Checklist M.1**.

Attached **Checklist M.2 – Storage Tank Maintenance Schedule** outlines procedures which should be performed at monthly and annual frequencies. Corrective actions taken to address deficiencies noted in the inspection should be recorded on the back side of **Checklist M.2**.

All of the valves should be exercised monthly by cycling them three times from 100% open to 100% closed. This exercise should be documented on attached **Checklist M.3 – Valve Verification Form**. Any time the valve positions are changed from their normal operating positions as provided in **Appendix E**, the change should be documented on **Checklist M.3**.

West 500k AST – The West 500k AST should be cleaned out annually. Follow the steps below to clean the tank.

Step	Procedure
1.	Empty the tank to the pump off elevation by transferring to tanker truck for disposal.
2.	Prepare alternate tanks SAST and NAST to receive flow while the 500k AST is off line.
3.	Switch valves at SWLS and NALS and cells 5A/B and 5C/D to direct flow to alternate storage tanks. Refer to **Figure 3-12**, **Table C.4** in **Appendix C** and **Table E.3** in **Appendix E**.
4.	Drain additional leachate from 500k AST by connecting vacuum truck to drain port.
5.	Conduct Confined Space entry to 500k AST following procedures outlined in HASP.
6.	Remove solids using vacuum truck. Solidify solids and place in landfill.
7.	Power wash interior of tank.
8.	Perform visual inspection.
9.	Close and reseal tank.
10	Test and evaluate cathodic protection. The tank installer (or equivalent) should perform this test. Refer to **Checklist M.2**.

- Repair – If repair is needed for the tank shell, contact tanks installer (or equivalent).

APPENDIX M

NAST and SAST Temporary Use Storage Tanks – The NAST and SAST will be used primarily for facilitating maintenance on the 500k ASTs or another component of the leachate conveyance system. The following procedures should be implemented whenever the tanks are taken out of active service:

Step	Procedure
1.	Completely drain the tank. Clean (Follow cleaning procedure described above) if it will remain out of service for a period exceeding 6 months
2.	Drain load-out pump and discharge lines
3.	Close and lock out inlet valves (This can be done at the South Valve Building and the NALS refer to **Table C.4 in Appendix C**)
4.	Inlet flow can be checked while tank is being drained and cleaned ensuring no flow into the tanks
5.	Maintain heat trace on inlet and discharge through the winter.
6.	Take level readings when conducting the Routine Leachate System Check to make sure leachate has not entered the tanks.
7.	Maintain electric power ON at the control panels.
8.	Bump test load-out pumps monthly: 1-Two people required 2-Operator 1 located by pump and Operator 2 located at the control panel 3-At the control panel, Operator 1 uses the keyed pump ON bypass switch to turn the pump on for a maximum duration of 5 seconds while listening for the motor starter contact coil to pull in and then turn the pump off. 4-Operator 2 visually confirms that the pump motor turns on and turns off. Warning: Do not exceed 5 second run time duration because there will not be any water in the pump and they should not be allowed to run dry.
9.	Maintain routine inspection of storage tanks per **Checklist M.1**
10.	**NOTE: the SAST will have NO interlock control over inlet pumps and will have to be monitored whenever filling**
11.	The NAST will be able to have interlock control over Cell 4 or the NALS
12.	Repeat steps 1 thru 4 if tank is used then put back out of service

CHECKLIST M.1
Countywide Landfill
Routine Storage Tank Inspection

Date:
Inspected by:

Tank inspections:	East 500k AST	West 500k AST	SAST	NAST	SWLS-overflow tanks	Comments
Rust	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	
Leaks (piping or valves)	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	
Cracks in Porcelan	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	
Pipe supports secure	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	
Signs and Labels legible	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	
Outdoor lighting working	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	
Ladder secure	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	
Drain valve closed and capped	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	
Heat trace ON	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	
Trip Hazards	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	
House keeping	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	
Sump pump working	Yes ☐ No ☐	Yes ☐ No ☐	N/A	Yes ☐ No ☐	Yes ☐ No ☐	
Loadout drains free of debris	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	
Leaks in Pump house	Yes ☐ No ☐	Yes ☐ No ☐	N/A	N/A	N/A	

Any changes to the flow valves should be recorded. Complete **Checklist M.3 - Valve Verification Form** Located in **Appendix M**
If pump or other system is noted to be malfunctioning or deficient, note observation in "Comments" section
Any leak, spill or alarm condition contact Jim Steigerwald at the Main office
Corrections made to any malfunction noted on this page must be recorded on the back side of this form

CHECKLIST M.1
Countywide Landfill
Routine Storage Tank Inspection

Date:
Inspected by:

Tank inspections:	Corrections made to anything noted on page 1
Rust	
Leaks (piping or valves)	
Cracks in Porcelan	
Pipe supports secure	
Signs and Labels legible	
Outdoor lighting working	
Ladder secure	
Drain valve closed and capped	
Heat trace ON	
Trip Hazards	
House keeping	
Sump pump working	
Loadout drains free of debris	
Leaks in Pump house	

CHECKLIST M.2
Countywide Landfill
Storage Tank Maintenance Schedule

Gateway tank Dan Witzigreuter-Office(440)-930-5101--Cell(440)-343-9475

		FILL IN DATE COMPLETED			
Maintenance Task	**Yearly schedule**	**W 500k**	**E 500k**	**NAST**	**SAST**
Remove solids and clean	Annually				
Inspect interior	Annually				
Inspect exterior	Annually				
Cathodic protection test	Annually				
Inspect roof vents and filters	Monthly				
Inspect floats, controls and interlock*	Monthly				
Inspect ladders and platforms Every Use	Monthly				
Service air compressors at 500k tank	Monthly				

***Entry into a storage tank requires a confined space permit.

*Follow procedure provided in Appendix A.

NOTE: The tank installer should be engaged to conduct annual inspections.
See contact name and number at the top of the table.

CHECKLIST M.2
Countywide Landfill
Storage Tank Maintenance Schedule

Maintenance Task	Corrections made to anything noted on page 1
Remove solids and clean	
Inspect interior	
Inspect exterior	
Cathodic protection test	
Inspect roof vents and filters	
Inspect floats, controls and interlock	
Inspect ladders and platforms Every Use	
Service air compressors at 500k tank	

CHECKLIST M.3
Countywide Landfill
Valve Verification Form

Date: _____

Performed by: _____

Valve Location	Position O=Open X=Closed	Valve Excercised	Reason for Changing Position	Authorized Signature
Valves in West 500k AST Valve House				
V 1	O ☐ X ☐	Y ☐ N ☐		
V 2	O ☐ X ☐	Y ☐ N ☐		
V 3	O ☐ X ☐	Y ☐ N ☐		
V 4	O ☐ X ☐	Y ☐ N ☐		
V 5	O ☐ X ☐	Y ☐ N ☐		
V 6	O ☐ X ☐	Y ☐ N ☐		
V 7	O ☐ X ☐	Y ☐ N ☐		
V 8	O ☐ X ☐	Y ☐ N ☐		
V 9	O ☐ X ☐	Y ☐ N ☐		
V 10	O ☐ X ☐	Y ☐ N ☐		
V 11	O ☐ X ☐	Y ☐ N ☐		
V 12	O ☐ X ☐	Y ☐ N ☐		
V 13	O ☐ X ☐	Y ☐ N ☐		
V 14	O ☐ X ☐	Y ☐ N ☐		
V 15	O ☐ X ☐	Y ☐ N ☐		
V 16	O ☐ X ☐	Y ☐ N ☐		
V 17	O ☐ X ☐	Y ☐ N ☐		
V 18	O ☐ X ☐	Y ☐ N ☐		
Valves in the SAST Valve House				
V 1	O ☐ X ☐	Y ☐ N ☐		
V 2	O ☐ X ☐	Y ☐ N ☐		
V 3	O ☐ X ☐	Y ☐ N ☐		
V 4	O ☐ X ☐	Y ☐ N ☐		
V 5	O ☐ X ☐	Y ☐ N ☐		
V 6	O ☐ X ☐	Y ☐ N ☐		
V 7	O ☐ X ☐	Y ☐ N ☐		
V 8	O ☐ X ☐	Y ☐ N ☐		
V 9	O ☐ X ☐	Y ☐ N ☐		
V 10	O ☐ X ☐	Y ☐ N ☐		
V 11	O ☐ X ☐	Y ☐ N ☐		
V 12	O ☐ X ☐	Y ☐ N ☐		
Valves at West 500k AST Load-out				
PV 1	O ☐ X ☐	Y ☐ N ☐		
PV 2	O ☐ X ☐	Y ☐ N ☐		
PV 3	O ☐ X ☐	Y ☐ N ☐		
Valves at Southwest Lift Station (SWLS)				
V 1	O ☐ X ☐	Y ☐ N ☐		
V 2	O ☐ X ☐	Y ☐ N ☐		
Valves at North Area Lift Station (NALS)				
V 1	O ☐ X ☐	Y ☐ N ☐		
V 2	O ☐ X ☐	Y ☐ N ☐		
V 3	O ☐ X ☐	Y ☐ N ☐		