HOWARD COUNTY HEALTH DEPARTMENT

65591

DATE 8/9/19

PS

Received From Sams Crete Construction PHONE # 443 821-4932

For Innovative System
2020 Willow Yellow Rd

☐ CASH
☒ CHECK
NO. 3195

Seven hundred twenty six Dollars

$ 726|00

Received By King

Howard County Health Department

Bureau of Environmental Health
8930 Stanford Boulevard, Columbia, MD 21045
Main: 410-313-2640 | Fax: 410-313-2648
TDD 410-313-2323 | Toll Free 1-866-313-6300
www.hchealth.org
Facebook: www.facebook.com/hocohealth

Maura J. Rossman, M.D., Health Officer

RECEIPT DATE: 8/9/19

ONSITE SEWAGE DISPOSAL SYSTEM PERMIT: I&A REPAIR DRIP

P 565591

APPROVAL DATE: 9/4/19 (KMW)

A

PROPERTY ADDRESS: 2020 Millers mill road

SUBDIVISION: _____ LOT: _____ TAX ID: _____

CONTRACTOR: Sams Creek EMAIL: _____

CONTRACTOR ADDRESS: _____ PHONE: _____

CONTRACTOR CERTIFIED FOR BAT INSTALLATION: ☒ MDE ☒ MANUFACTURER: **Norweco**

PROPERTY OWNER: _____ EMAIL: _____

OWNER ADDRESS: _____ PHONE: _____

BAT UNIT MODEL: **Norweco TNTLP 600** PUMP SIZE: _____ PUMP TANK CAPACITY: **1250g**

OPERATION & MAINTENANCE AGREEMENT DATE SIGNED: 7/31/19 DATE RECORDED: 7/31/19

DISTRIBUTION SYSTEM: ☐ GRAVITY ☒ PRESSURE DOSED BEDROOMS: **4** APPLICATION RATE: _____

TRENCHES:	LINEAR FEET REQUIRED: n/a	INLET DEPTH: **n/a**
	TRENCH WIDTH: n/a	MAXIMUM BOTTOM DEPTH: **n/a**
	MINIMUM SPACE BETWEEN TRENCHES:	EFFECTIVE AREA BEGINNING DEPTH:
LOCATION:	**SYSTEM TO BE STAKED BY DESIGNER AND VERIFIED BY APPROVING AUTHORITY DURING PRE-CONSTRUCTION INSPECTION.**	
NOTES:	Install system per approved design plans by Adam Browning Penns Tail. All inspections must be called in by installer.	

ISSUED BY: **Kevin M. Wolf, L.E.H.S.** ISSUE DATE: **8/9/2019** EXPIRATION DATE: **8/9/2020**

NOTE: CONTRACTOR MUST SCHEDULE A PRE-CONSTRUCTION INSPECTION PRIOR TO BEGINNING ANY INSTALLATION

NOTE: CONTRACTOR MUST SCHEDULE AN INSPECTION AND GAIN APPROVAL OF ALL COMPONENTS PRIOR TO COVERING

NOTE: STONE MUST BE APPROVED BY HEALTH DEPARTMENT AND GRAVEL TICKET MUST BE AVAILABLE FOR REVIEW.

NOTE: WATERTIGHT SEPTIC TANKS REQUIRED

NOTE: ALL PARTS OF SEPTIC SYSTEM SHALL BE AT LEAST 100 FEET DOWNGRADIENT FROM ANY WATER WELL

NOTE: MANHOLE RISERS REQUIRED ON ALL SEPTIC TANKS AND PUMP CHAMBERS

NOTE: AN ELECTRICAL PERMIT IS REQUIRED FOR INSTALLATION OF ANY ELECTRICAL COMPONENTS OF THE SYSTEM

☒ *ELECTRICAL PERMIT ISSUED* E 19004504

NOTE: THE HCHD DOES NOT WARRANTY ANY SYSTEM AND CANNOT GUARANTEE THE PERFORMANCE OF THIS SYSTEM AS DESIGNED. BY ACCEPTING THIS PERMIT, THE OWNER AND/OR APPLICANT ACKOWLEDGE THAT THE SPECIFICATIONS DETAILED IN THIS DESIGN ARE ONE POSSIBLE OPTION AND THAT THE HCHD WILL REVIEW OTHER PROPOSALS. YOU HAVE THE OPTION TO SEEK THE ADVICE OF A QUALIFIED DESIGN CONSULTANT OR PROFESSIONAL ENGINEER FOR FURTHER GUIADNCE.

NOTE: AN INDIVIDUAL CERTIFIED BY MDE AND THE MANUFACTURER FOR BAT INSTALLATION MUST BE PRESENT AT ALL TIMES DURING BAT INSTALLATION.

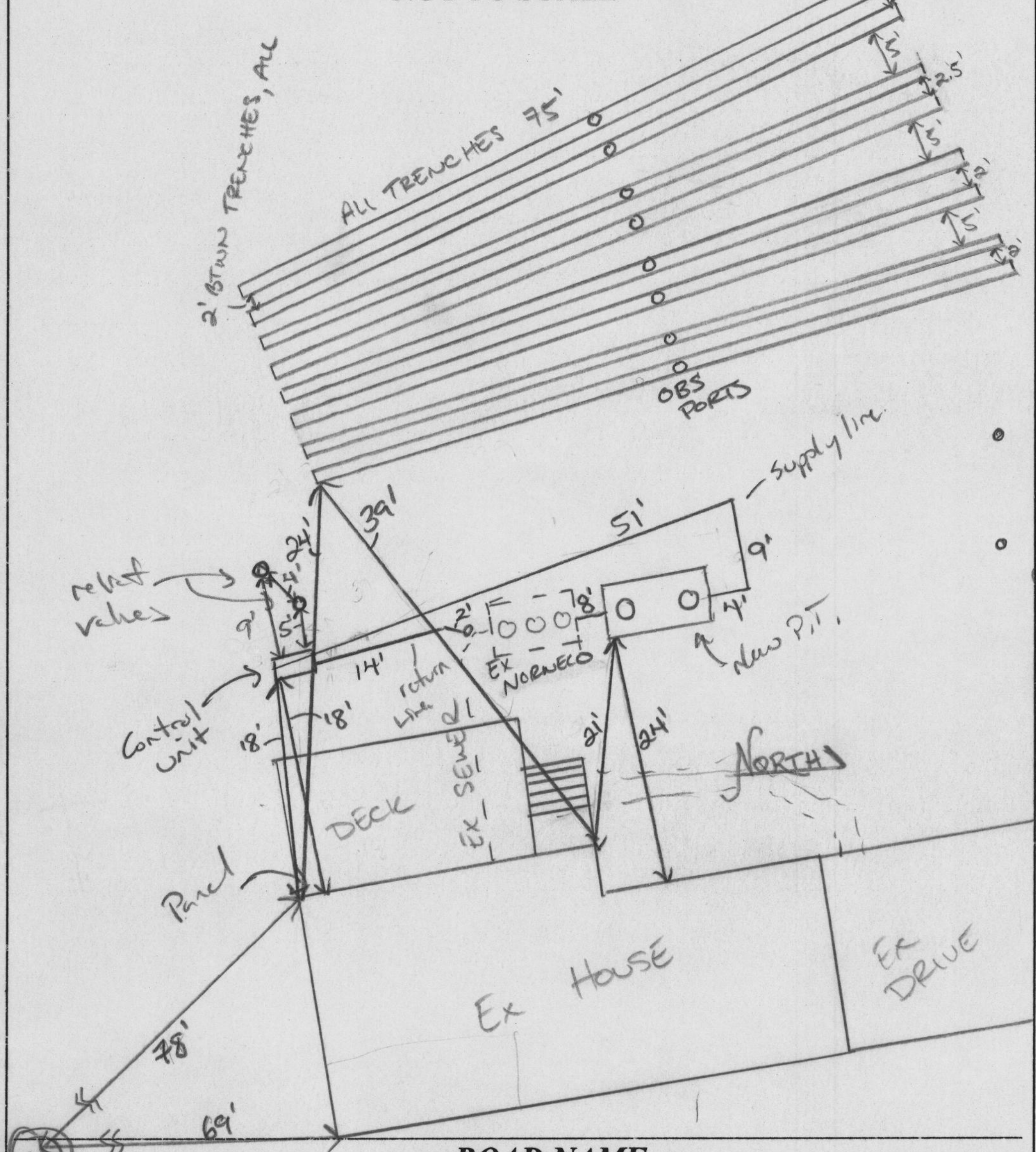
NOTE: MDE RECOMMENDS SEPTIC TANKS, BAT, AND OTHER PRETREATMENT UNITS BE PUMPED AT A FREQUENCY ADEQUATE TO ENSURE THAT SOLIDS ARE NOT DISCHARGED TO THE DISPOSAL AREA

NEITHER THE HOWARD COUNTY COUNCIL NOR THE HEALTH DEPARTMENT IS RESPONSIBLE FOR THE SUCCESSFUL OPERATION OF ANY SYSTEM.

PERMITTEE RESPONSIBLE FOR OBTAINING FINAL APPROVAL ON THIS PERMIT.

CALL 410-313-1771 TO SCHEDULE INSPECTIONS.

NOT TO SCALE



ROAD NAME Ho-95-2495 MILLERS MILL

TRENCH/DRAINFIELD DATA

WIDTH	INLET	BOTTOM
1'	1'	2'

NUMBER OF TRENCHES 8

TOTAL LENGTH 600 F

ABSORPTION AREA 600 SF

DISTRIBUTION BOX LEVEL N/A

DISTRIBUTION BOX BAFFLE N/A

DISTRIBUTION BOX PORT N/A

SEPTIC TANK DATA

SEPTIC TANK 1 LEVEL Existing (Norweco)

MANUFACTURER Baker precast

CAPACITY JNT LP 600 GAL

SEAM LOC TOP

TANK LID DEPTH 18"

BAFFLES –

BAFFLE FILTER Yes

MANHOLE LOC Front/Rear

6" PORT LOC none

WATERTIGHT TEST OK

SLOTTED Yes

DATE ON LID N/A

PUMP/SEPTIC TANK LEVEL YES

MANUFACTURER BABYLON

CAPACITY 1500 GAL

SEAM LOC TOP

TANK LID DEPTH 2'

BAFFLES –

BAFFLE FILTER PUMP FILTER

MANHOLE LOC FRONT/BACK

6" PORT LOC –

WATERTIGHT TEST –

SLOTTED NO

DATE ON LID 07/29/2019

PRE-CONSTRUCTION: 8/22/19 Pre-construction meeting w/ Steve Krug, new homeowner Dwayne Jones, Eddie Hanson, Ho Co., Sam's Creek. Discussed design, sequence of construction including location of CU, depth of CU and panel. Discussed keeping original layout of drip field/trenches due to separation distance and contours. (KAB)

INSTALLATION: 8/26/19 (AM) Contractor removed few inches of topsoil over drip field starting lower trenches. Verified lower berm and sand on site. OK to continue (KM)

8/26/2019 (PM) 4 LOWER TRENCHES COMPLETED, TWO LOWEST WITH SAND. OK TO CONTINUE. BAT + CONTRACTOR ON SITE. 8/27/2019 UPPER TRENCHES COMPLETE. INSTALLED DRIP LINE IN LOWER 7 TRENCHES. GLUE JOINTS APPEAR OK. 8/28/2019 (PM) CORR. ACT. REMOVE 5' OF EX LOWER TRENCH. 8/29/2019 TRENCH SEALED, TANK SET @ 8/30/2019 FORCE MAIN INSTALLED AND START UP

FINAL INSPECTOR K. Wolf DATE OF APPROVAL 9/4/19

9/4/19 Pump test of Drip system completed.

Bay Area Environmental
4213 Madonna Rd
Jarrettsville, MD 20184
410-836-9206

DRIP DISPOSAL CERTIFICATION STATEMENT

To: Howard County Health Dept
Maryland Department of Environment

September 4, 2019

Re: 2020 Millers Mill Rd – Cooksville

Installer: Sams Creek

I herby certify that the onsite sewage disposal system has been installed and completed in accordance with the design. This certification pertains to the following:

1. The proper components were used as specified in the design
2. The components were installed and functioning properly in accordance with the design

The declaration is based on the best information available provided by the contractor affirming that the system has been installed and completed in accordance with the provisions outlined in the permit, design and field observations/inspections made prior to, during and/or after installation of the system. It should be noted that the entire installation of the system was not monitored and therefore, the bulk of the responsibility for the proper installation of the system must fall on the installer.

Startup date 9-4-19
Dose rate zone 1 = 5.9 gpm
Gallons per dose zone 1 = 59.63 gallons
Dose run time zone 1 = 9.10 minutes
Standard rest time = 4 hrs
Peak rest time = 2hrs 10 min
Flush rate = zone 1 = 14.5 gpm
Final meter reading = 309.05 gallons

Dwayne C Jones
Bay Area Environmental

Total tubing 500 ft / 2 .0101 gpm/end

Forward flush rate 14.5 gpm

PLAN VIEW ABSORPTION AREA

SCALE-1"=6'

Backflush to forward flush recirc

No Backflush to septic tank

DOSE PUMP TO CU DATA:

MAXIMUM HEAD LOSSES IN CU	115.00	FT.		(DURING BACKFLUSH CYCLE)
STATIC HEAD	4.77	FT.		(PUMP TO CU)
MAX. DELIVERY LINE LENGTH	5.00	FT.		(PUMP TO CU)
FRICTION LOSS DELIVERY LINE	1.03	FT./100 FT.		(PUMP TO CU)
DELIVERY LINE FRICTION LOSS	0.05	FT.		(PUMP TO CU)
MAXIMUM DESIGN FLOW	15.00	GPM		(BACKFLUSH FLOW)
TOTAL HEAD	119.82	FT.	@ GPM	
MAXIMUM DESIGN FLOW	12.50	GPM		(DOSE PLUS FLUSH CYCLE)
CU CAPABILITY	15	GPM		

PUMP SELECTION ANALYSIS:

UNIT					
ZONE 1	12.50	GPM	@	56.10	FT./HEAD
CU	15.00	GPM	@	119.82	FT./HEAD
PUMP SHALL DELIVER	15.00	GPM	@	119.82	FT./HEAD

THE ABOVE SELECTS THE MOST LIMITING SYSTEM FACTORS OF THE PRIMARY COMPONENTS.

DOSE SUMMARY & TIMER RECOMMENDATIONS:

ZONE	*1*	
PERCENT OF TUBING	100.00%	
CYCLES PER DAY	6.00	AVERAGE
CYCLES PER DAY	5.54	PEAK ENABLED
GALLONS PER DAY PER ZONE	600.00	PEAK DAILY FLOW
GALLONS PER DAY PER ZONE	360.00	AVERAGE DAILY FLOW
GALLONS PER DOSE CYCLE	60.00	GAL.
ZONE DELIVERY	6.10 (5.9 gpm)	GPM
PUMP RUN TIME	9.84 (9.10)	MINUTES
DRAWDOWN	2.08	INCHES
240 MINUTE AVG. CYCLE DOSE	360.00	GAL./DAY
130 MINUTE PEAK CYCLE DOSE	600.00	GAL./DAY

58.92 gpd Dose

69.63

*AVAILABLE VOLUME ABOVE DOSE ENABLE = 290.26 GALLONS

SAND-LINED DRIP TRENCH ELEVATIONS

TRENCH	TRENCH LENGTH	GROUND (TRENCH CENTER)	BOTTOM OF TRENCH	TUBING ELEV.	TOP OF SAND	FINISHED GRADE	TRENCH BOTTOM AREA	TOTAL TUBING PER LATERAL	TOT P
A	75.0'	603.35	601.35	602.18	602.35	603.35	75.00 SQ. FT.	300 L.F.	
B	75.0'	603.28	601.28	602.11	602.28	603.28	75.00 SQ. FT.		

Septic Design & Component Report

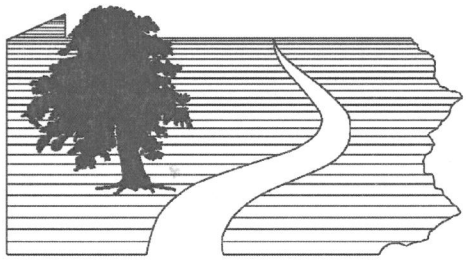
Prepared for

2020 Millers Mill Road
Account# 327187

Situate in

04th Election District,
Howard Co., MD

Prepared by



Penn's Trail Environmental, LLC

327 E. Ridgeville Blvd. - #141
Mount Airy, MD 21771
Phone: (301) 829-5022
Fax: (215) 362-4620
www.pennstrail.com

May 24, 2019

PTE#4008

Septic Design & Component Report

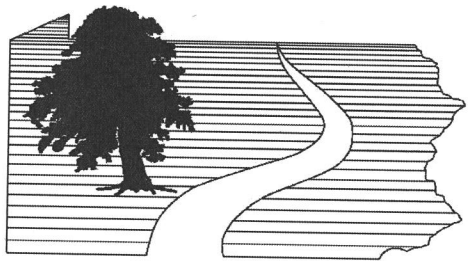
Prepared for

2020 Millers Mill Road
Account# 327187

Situate in

04th Election District,
Howard Co., MD

Prepared by



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May 24, 2019

PTE#4008

Index

Appendices

GENERAL PROJECT STATEMENT

The property is located at 2020 Millers Mill Road, 4th Election District, Howard County, Maryland. The subject tract can be more specifically identified as Parcel Identification Number 04-327187.

An estimate of 600 gallons per day (GPD) was applied to calculate flow from the existing/proposed dwelling per guidelines of COMAR.

Note: "System Component Identification Number (I.D.) below corresponds to numbers as found on the design plan set(s) and Appendices of this report.

SYSTEM COMPONENT I.D. #1 – BEST AVAILABLE TECHNOLOGY (BAT)

Treatment of the sewage will be through an existing Norweco Singulair Green TNT 500/600 GPD Aerobic Treatment Plant. All chamber openings and/or vents shall be extended to grade. For pumping schedule please contact manufacturer or speak with a representative of the permitting agency. Additional maintenance is to be performed per the manufacturer's recommendations. See manufacturer's installation instructions.

SYSTEM COMPONENT I.D. #2 - ABSORPTION AREA DOSE TANK & PUMP

The drip field is dosed from a single compartment pump tank with a single phase Submersible Pump. A detailed specification sheet is attached. Maintenance will include inspection of the tank connections for watertight integrity, inspection of the pump floats to function and free movement along the operational path, and activating the alarm via the in-tank float. These procedures should occur at least twice per year.

SYSTEM COMPONENT I.D. #3 – CENTRAL HYDRAULIC CONTROL UNIT

The Hydraulic Control Unit provides the final filtration through the use of in-line disk filters that must have a filtration efficiency of 115 microns or smaller and requires little routine maintenance. Filters must have an automatic backwash system that is utilized prior to every dose. Each disposal zone is to be forward flushed a minimum of every 50 cycles at a scouring velocity of 2 feet per second. Unit must be fitted with a flow meter for proper monitoring of the system. Maintenance is to be performed per the manufacturer's recommendations. At minimum the unit vault should be checked for inundation, insect or animal damage and overall integrity.

ALARMS & CONTROL PANELS

Alarms and controls panels are specified from standard product lines and are included in the drip irrigation kit sold by the manufacturer and/or a distributor of the specified materials. Once initial startup is confirmed each system should be checked quarterly by the operator (alarms and monitor) and bi-annually during the full inspections. Any failure noted shall be immediately remedied.

OPERATION OF SYSTEM

The system has been designed to operate daily all months of the year with minimal user intervention. In the event an alarm sounds or is seen, it is recommend the owner contact the installer and/or manufacturer for inspection, service and if needed repair.

OPERATION & MAINTENANCE NOTES

By this reference the Letter of Agreement for Monitoring, manufacture's owner's manual and requirements, local permitting agency's permit conditions and general regulations. In the cases of dispute in frequency or necessity of operational procedures, the most restrictive recommendation shall apply.

COPYRIGHT & INFRINGEMENT STATEMENT

This maintenance and operation manual and attached plans are proprietary and copyright© 2019 by Penn's Trail Environmental, LLC. The format style and content has been developed solely for the use of the client and/or property owner of the tract specifically identified herein. Duplication, re-use, or generation of reports substantially similar in content, language and format is expressly forbidden. Any other copy or transmission will be considered a violation of copyright protection and subject to recovery of damages as permitted by state and federal statutes.

MATERIAL SUBSTITUTIONS

The materials specified are based on manufacturer's publications and specifications contained herein or by reference. By recognition of continually evolving materials and methods, local availability, costs, as well as contractor experience, substitution is permitted of equivalent and similar materials for the following components: tanks and aerobic treatment units (ATU-must be approved by manufacturer of drip package), hydraulic control unit, drip tubing and electrical devices and float systems.

Pumps have been specifically calculated based on existing and proposed components to operate within an acceptable range of performance without developing diminished or excessive system pressures, thus better assuring long-term components and economical performance. Pumps are not to be substituted without suppliers and manufacture's approval.

SIGNATURES

The following signature is required to ensure that the applicant involved understands the system components as well as the necessary maintenance of the system outlined in this manual to properly ensure that the drip irrigation system installed remains working at peak efficiency.

_____ _____

Applicant Date

A representative of the manufacturer must meet with the homeowner within 1 month of system start-up and/or occupancy of the dwelling.

Soil Reporting Forms & Data

System Component #1 –Best Available Technology (BAT)

WASP PANEL MODEL 11T

norweco® SERVICE PRO®

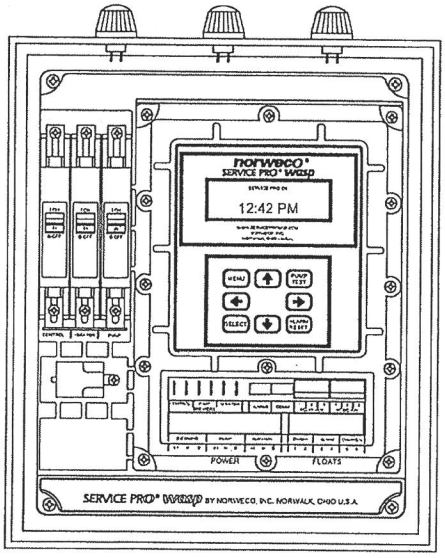
WASP SERIES INTEGRATED SYSTEM CONTROLS

ELECTRICAL WIRING AND CONTROL CENTER INSTALLATION

The information contained in these instructions is not intended to be a complete electrical installation reference, as code requirements vary according to geographic area. These instructions focus only on the specific requirements for the Service Pro WASP controls. They do not cover all installation aspects of the underground electrical cable and control center, preliminary inspection, testing and service of the control center or troubleshooting. More instructions are contained in the Bio-Kinetic Wastewater Treatment System Electrical Wiring and Control Center Installation yellow sheet. All electrical work must be performed in accordance with the latest edition of the National Electrical Code and all applicable local codes.

UNDERGROUND ELECTRICAL CABLE INSTALLATION

1. A separate underground electrical service cable must be installed from the main electrical panel in the home to the Service Pro WASP control center. The electrical service cable must be UL or CSA approved, type UF, #12/2 AWG minimum and must have a full-size center ground. Larger cable is required if the underground service needs to be run more than 80 feet.
2. A separate underground electrical service cable must be installed for each aerator within the Singulair system. The electrical service cable must be UL or CSA approved, type UF, #14/2 AWG minimum and must have a full-size center ground. Larger cable is required if the underground service needs to be run more than 80 feet.



WASP SERIES CONTROLS

3. A separate underground electrical service cable must also be installed for the effluent pump and each float switch. The electrical service cable supplying power to the pump must be UL or CSA approved, type UF, #12/2 AWG minimum and must have a full-size center ground. Larger cable is required if the underground service needs to be run more than 80 feet. **NOTE:** The float switch cables carry low voltage for controls only and do not carry the full electrical load of the pump. Float switch cables should be #16 AWG minimum.
4. Each underground cable must be continuous and unspliced from the Service Pro WASP control center to the main electrical panel in the home, aerator, pump and float switches. Underground cable must be protected in conduit anytime the cable path passes directly across a tank or underground structure.
5. Uncoil the electrical service cables into the influent sewer line trench. Extend the aerator cable to the aerator mounting casting. Extend the pump and float switch electrical service cables to the pump station chamber. **NOTE:** Leave sufficient slack in the cables so they will not be stressed during backfilling or settling.
6. All underground cables should have at least two feet of earth cover to prevent damage from landscaping, trenches, etc. or be installed in an approved conduit.

INSTALLATION OF ELECTRICAL CONTROL CENTER

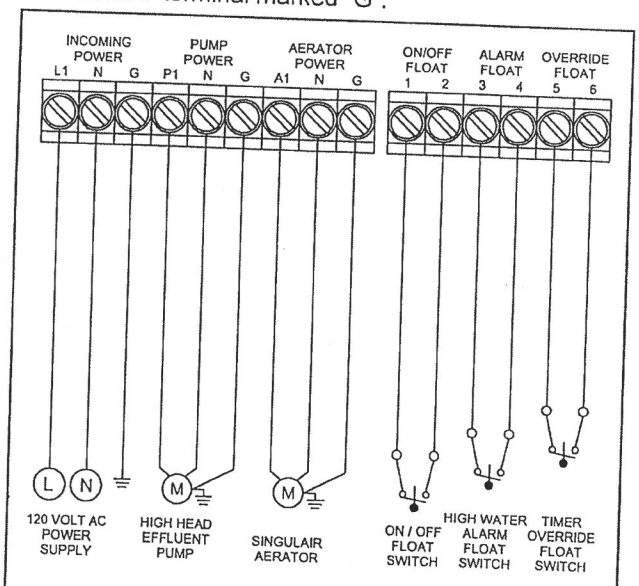
The control center should be wired for operation when the tankage and underground electrical cables are installed. The Service Pro WASP controls should be located so that all warning lights can be readily seen and the audible alarm heard. The mounting location should minimize exposure to direct sunlight, freezing rain or conditions that might prevent routine inspection or access. The control center should always be mounted out of the reach of children.

Remove the control center insert and all packaging from the enclosure. Drill the appropriate openings in the bottom of the enclosure and install a conduit connector in each opening. Exposed wiring to or from the control center should always be encased in conduit. Mount the control center securely using masonry nails, wood screws or common nails as appropriate. Install the control center insert into the enclosure and secure with the four screws provided. The alarm light wires on the insert must now be connected to the alarm lights. Connect the yellow wires to the yellow light, the blue wires to the blue light, and the red wires to the red light.

WASP PANEL MODEL 11T

SERVICE PRO® WASP WIRING AND INSTALLATION (Cont.)

1. Use a dedicated 120 volt AC, 20 amp, single-phase circuit breaker in the main electrical panel for service to the Service Pro WASP control center. **CAUTION: Make sure the breaker is de-energized. Check it with an electrical multi-meter before proceeding with installation of the control center. Remember that other circuits in the service panel may remain energized as you are working. Use only tools with insulated handles, stand in a dry location and work with extreme care.**
2. Wire from a dedicated breaker in the main service panel to the "INCOMING" power terminal marked "L1" in the control center using copper wire with black insulation.
3. Wire from the neutral in the main service panel to the "INCOMING" power terminal marked "N" in the control center using copper wire with white insulation.
4. Connect the ground conductor from the main service panel to the "INCOMING" power terminal marked "G" in the control center using bare copper wire. **IMPORTANT:** Never allow the white neutral leads and ground leads to be spliced together or connected to common terminals.
5. Connect the power wire from the pump to the "PUMP" power terminal marked "P1" in the control center using copper wire with black insulation.
6. Connect the neutral wire from the pump to the "PUMP" power terminal marked "N" in the control center using copper wire with white insulation.
7. Connect the ground wire from the pump to the "PUMP POWER" terminal marked "G".



CONTROL CENTER WIRING

8. Connect the power wire from the aerator to the "AERATOR" power terminal marked "A1" in the control center using copper wire with black insulation.
9. Connect the neutral wire from the aerator to the "AERATOR" power terminal marked "N" in the control center using copper wire with white insulation.
10. Connect the ground wire from the aerator to the "AERATOR POWER" terminal marked "G".
11. Connect the wires from the float switches into the terminal block marked "FLOAT" in the Service Pro WASP control center.
12. Connect the wires from the on/off float switch to the two float terminals marked "ON/OFF".
13. Connect the wires from the high water alarm float switch to the two float terminals marked "ALARM".
14. If a timer override float switch is being installed, connect the wires from the timer override float switch to the float terminals marked "OVERRIDE".
15. If auxiliary inputs are being connected to the Service Pro WASP control center, push button style terminals are provided for the auxiliary input connections. Use #16 AWG or smaller wires in the push button terminals.
16. If the auxiliary device uses dry contact (no voltage supplied) to signal an alarm condition, connect the wires from the auxiliary device to the "AUX 1", "AUX 2" or "AUX 3" terminals marked "AUX RELAY CONTACTS" on the blue push button terminal block.
17. If the auxiliary device supplies a voltage (5 to 120 volts) to signal an alarm condition, connect the wires from the auxiliary device to the "AUX 1", "AUX 2" or "AUX 3" terminals marked "AUX AC/DC CONTACTS" on the red push button terminal block. **CAUTION: Do not connect devices to both the "AUX RELAY CONTACTS" and "AUX AC/DC CONTACTS" terminals for a single auxiliary input. Doing so may damage the circuit board.**
18. Inspect your work to make sure that there are no breaks in wiring insulation and that all connections are secure. Tighten all screws on the terminal board.
19. Carefully form all wiring neatly into the lower part of the Service Pro WASP control center. Do not allow the wires to make contact with other electrical components.
20. **IMPORTANT:** Seal all conduit openings with duct seal compound or similar appropriate material.
21. Clearly label the dedicated circuit breaker used for the Service Pro WASP control center inside the door of the main service panel.
22. Place all three circuit breakers in the Service Pro WASP control center in the "off" position. Close and secure the control center cover.

BEFORE LEAVING

Complete all of the remaining steps outlined in the Bio-Kinetic Wastewater Treatment System Electrical Wiring and Control Center Installation yellow sheet. Check to insure that all electrical controls, circuits and wiring for the Singulair system are de-energized. Be sure the red warning tag and distributor identification label are attached to the control center.

MANUFACTURED BY

norweco®

Engineering the future of water and wastewater treatment

NORWECO, INC.
NORWALK, OHIO
U.S.A. 44857
www.norweco.com

WASP PANEL MODEL 11T

norweco® SERVICE PRO®

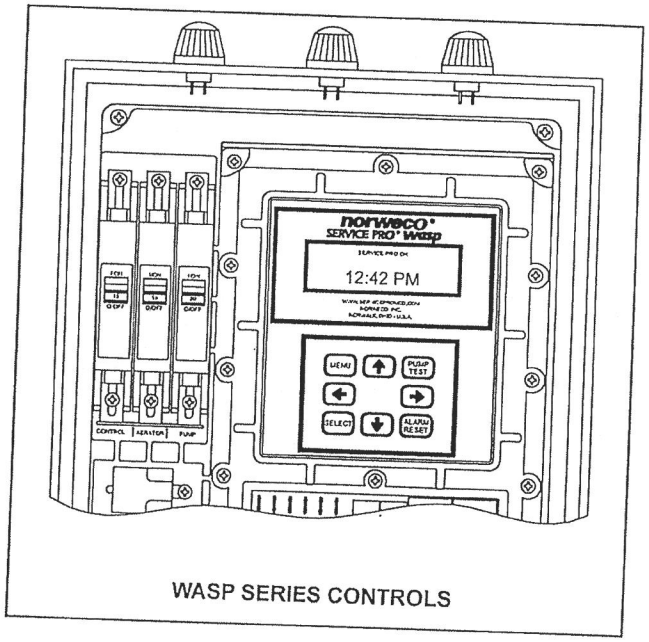
WASP SERIES INTEGRATED SYSTEM CONTROLS

START-UP AND OPERATION INSTRUCTIONS

The information contained in these instructions is not intended to be a complete electrical installation reference, as code requirements vary according to geographic area. These instructions focus only on the specific requirements for the Service Pro WASP controls. They do not cover all installation aspects of the underground electrical cable and control center, preliminary inspection, testing and service of the control center or troubleshooting. More instructions are contained in the Bio-Kinetic Wastewater Treatment System Electrical Wiring and Control Center Installation yellow sheet. All electrical work must be performed in accordance with the latest edition of the National Electrical Code and all applicable local codes.

PROGRAMMING THE PANEL

1. After wiring has been completed, the Service Pro WASP control center must be programmed to operate the Singulair system. Make sure the breakers in the home and in the panel are both in the "on" position and the display in the control center reads "SERVICE PRO OK" on the top line.
2. Press the "MENU" button on the touchpad to access the programming menu of the control center. "SET CLOCK" and "SET HOURS" will be displayed on the screen. Press the up or down arrow button on the touchpad to set the correct hours value.
3. Once the correct hours value is displayed, press the right arrow button to set the minutes value. The display will read "SET MINUTES". Press the up or down arrow button to set the correct minutes value.
4. Once the correct minutes value is displayed, press the right arrow button to set the seconds value. The display will read "SET SECONDS". Press the up or down arrow button to set the correct seconds value.



WASP SERIES CONTROLS

5. Once the correct seconds value is displayed, press the right arrow button on the touchpad to set the aerator run time. The display will read "AERATOR RUN TIME". Press the up or down arrow button to change the aerator run time in one minute increments. This value can be set from 30 minutes up to continuous operation.
6. Once the aerator run time has been set, press the right arrow button button on the touchpad to set the pump timer mode. The display will read "PUMP TIMER MODE". Press the up or down arrow button to change the timer mode. Available options include NO TIMER mode, TIME OF DAY mode and CYCLE TIMER mode. NO TIMER mode operates the pump on a demand use basis controlled by the float switches. TIME OF DAY mode enables the pump to operate at a set time range during the day and works in conjunction with the float switches. CYCLE TIMER mode enables pump operation on a repeat cycle and works in conjunction with the float switches. For TIME OF DAY mode, proceed to step 7 below. For CYCLE TIMER mode, proceed to step 8 below.
7. If the TIME OF DAY mode has been selected, press the right arrow button on the touchpad to set the pump on time. This is the time of day that the pump will begin operating.
   a. "PUMP ON TIME" and "SET HOURS" will be displayed on the screen. Press the up or down arrow button to set the desired hours value.
   b. Once the correct hours value has been set, press the right arrow button to set the minutes value. The display will read "SET MINUTES". Press the up or down arrow button to set the desired minutes value.
   c. Once the correct minutes value has been set, press the right arrow button to set the pump off time. This is the time of day that the pump will be disabled. "PUMP OFF TIME" and "SET HOURS" will be displayed on the screen. Press the up or down arrow button to set the desired hours value.
   d. Once the correct hours value has been set, press the right arrow button to set the minutes value. The display will read "SET MINUTES". Press the up or down arrow button to set the desired minutes value.
   e. Proceed to step 9 below.

WASP PANEL MODEL 11T

SERVICE PRO® WASP START-UP AND OPERATION (Cont.)

8. If the CYCLE TIMER mode has been selected, press the right arrow button on the touchpad to set the pump on time. This is the length of time that the pump will operate each cycle.
   a. "PUMP CYCLE ON TIME" and "SET HOURS" will be displayed on the screen. Press the up or down arrow button to set the desired hours value.
   b. Once the correct hours value has been set, press the right arrow button to set the minutes value. The display will read "SET MINUTES". Press the up or down arrow button to set the desired minutes value.
   c. Once the correct minutes value has been set, press the right arrow button to set the seconds value. The display will read "SET SECONDS". Press the up or down arrow button to set the desired seconds value.
   d. Once the correct seconds value has been set, press the right arrow button to set the pump off time. "PUMP CYCLE OFF TIME" and "SET HOURS" will be displayed on the screen. Press the up or down arrow button to set the desired hours value.
   e. Once the correct hours value has been set, press the right arrow button to set the minutes value. The display will read "SET MINUTES". Press the up or down arrow button to set the desired minutes value.
   f. Once the correct minutes value has been set, press the right arrow button to set the seconds value. The display will read "SET SECONDS". Press the up or down arrow button to set the desired seconds value.
9. Press the right arrow button on the touchpad to enter the auxiliary input alarms configuration screen. The display will read "AUXILIARY ALARMS" and the AUX1 value should be selected. Press the up or down arrow button to change the auxiliary 1 input from N-OP (normally open) to N-CL (normally closed) if required. If auxiliary input 1 will not be used, leave AUX1 set to N-OP.
10. Once auxiliary input 1 has been configured, press the right arrow button on the touchpad to configure auxiliary input 2. The AUX2 value should be selected. Press the up or down arrow button to change the auxiliary 2 input from N-OP (normally open) to N-CL (normally closed) if required. If auxiliary input 2 will not be used, leave AUX2 set to N-OP.
11. Once auxiliary input 2 has been configured, press the right arrow button on the touchpad to configure auxiliary input 3. The AUX3 value should be selected. Press the up or down arrow button to change the auxiliary 3 input from N-OP (normally open) to N-CL (normally closed) if required. If auxiliary input 3 will not be used, leave AUX3 set to N-OP.
12. Press the right arrow button on the touchpad to exit the programming menu. The display should read "SERVICE PRO OK" on the top line. The Service Pro WASP control center programming is complete and the system is now ready for operation.

VIEW SYSTEM STATUS AND CONFIGURATION

The Service Pro WASP control center records parameters regarding the Singulair system that can be reviewed at any time. Adjustments to the programming can be made as required. To review recorded data and system parameters:

1. Press the "SELECT" button on the touchpad. The screen should display the elapsed pump run time.
2. Press the right arrow button to review the pump cycle count.
3. Press the right arrow button to review the aerator elapsed run time.
4. Press the right arrow button to review the aerator cycle count.
5. Press the right arrow button to review the auxiliary input configurations.
6. Press the right arrow button to review failsafe mode status, software version and panel serial number.
7. Press the right arrow button to exit the system parameters menu.

PUMP TEST

The Service Pro WASP control center has a built-in pump test feature. To start a pump test, hold the "PUMP TEST" button for five seconds. The screen will display "PUMP TEST" and the pump will turn on. The pump will operate for five minutes and then will turn off.

ALARM TEST

The Service Pro WASP control center has a built-in alarm test feature. To start an alarm test, hold the "ALARM RESET" button for five seconds. The screen will display "ALARM TEST" and the audible and visual alarms will turn on for five seconds. After five seconds, the alarms will turn off.

ALARM CONDITIONS

If the Service Pro WASP control center detects an abnormal condition, the display will indicate the specific problem the system is experiencing. For example, if the aerator is drawing high amps, the display will read "AERATOR HIGH CURRENT." To silence the alarms and attempt to clear the alarm condition, press the "ALARM RESET" button. If the issue has been corrected, the system will turn off the alarms and resume normal operation. If a problem still exists, the audible alarm will be silenced for 48 hours, but the visual alarm will continue to light. In addition, detailed information regarding the specific problem will be displayed on the screen.

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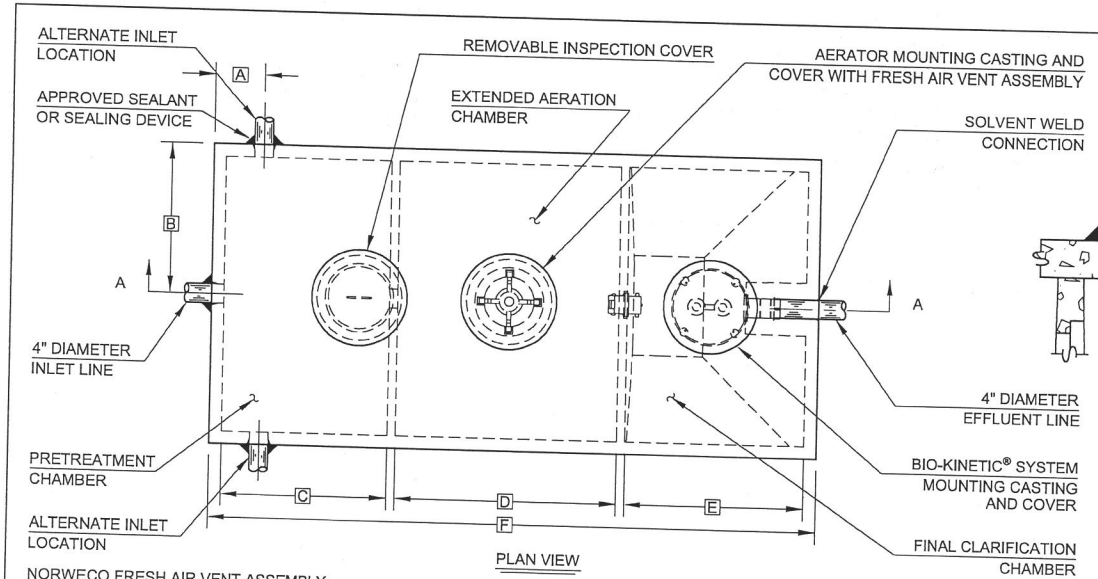
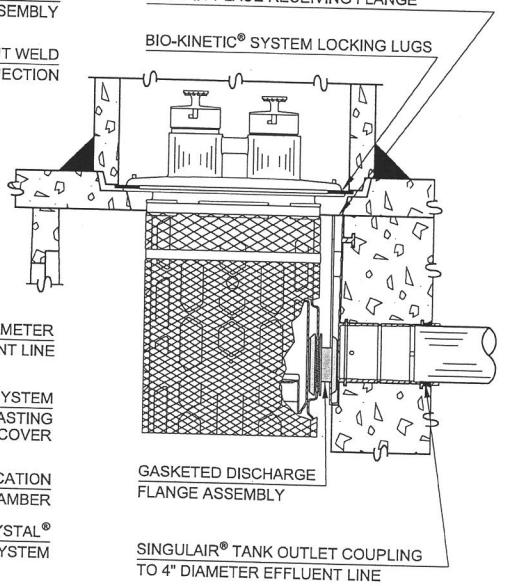
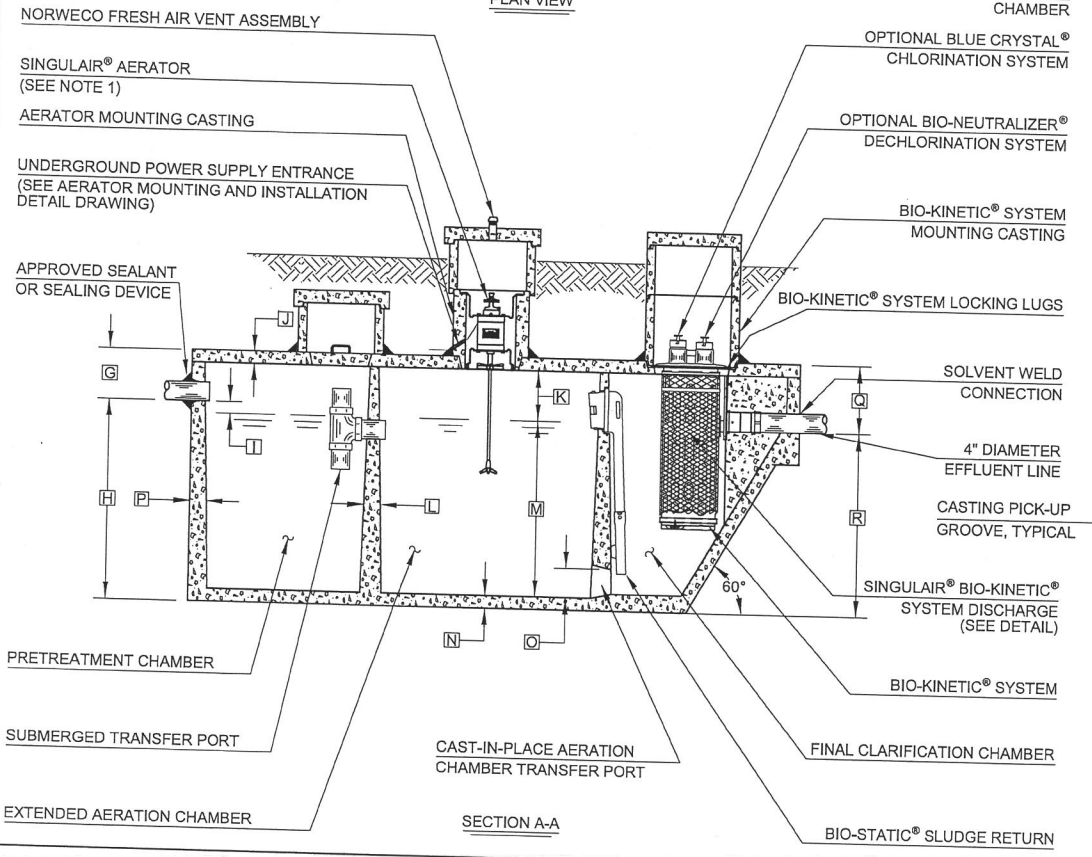


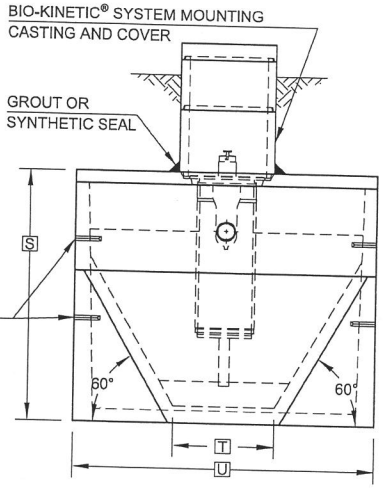
PLAN VIEW



BIO-KINETIC® SYSTEM DISCHARGE DETAIL



SECTION A-A



OUTLET END VIEW

NOTE: TOTAL SYSTEM CAPACITY: 1,300 GALLONS
RATED CAPACITY: 500 GALLONS PER DAY

GENERAL NOTES:

1. SINGULAIR® AERATOR, AS TESTED AND ACCEPTED BY NSF, OPERATING 60 MINUTES ON / 60 MINUTES OFF.
2. FALL THROUGH SINGULAIR® PLANT FROM INLET INVERT TO OUTLET INVERT IS FOUR INCHES. INLET INVERT IS TWELVE INCHES BELOW TANK TOP.
3. ON DEEPER INSTALLATIONS, PRECAST RISERS MUST BE USED TO EXTEND AERATOR MOUNTING CASTING AND BIO-KINETIC® SYSTEM MOUNTING CASTING TO GRADE.
4. TANK REINFORCED PER ACI STD. 318-05.
5. REMOVABLE COVERS ON RISERS WEIGH IN EXCESS OF SEVENTY-FIVE POUNDS EACH TO PREVENT UNAUTHORIZED ACCESS.
6. CONTACT THE LOCAL, LICENSED SINGULAIR® DISTRIBUTOR FOR ELECTRICAL REQUIREMENTS.

PROJECT ENGINEER'S APPROVAL:
I (WE) HEREBY CERTIFY THAT THIS DRAWING HAS BEEN CHECKED AND IS APPROVED FOR USE IN CONFORMITY WITH THE CONTRACT DOCUMENTS.

DATE: _____

NAME: _____

CONTRACTOR'S CERTIFICATION:
I (WE) HEREBY CERTIFY THAT THIS DRAWING HAS BEEN CHECKED AND IS APPROVED FOR USE IN CONFORMITY WITH THE CONTRACT DOCUMENTS.

DATE: _____

NAME: _____

CRITICAL DIMENSIONS

A	1'- 0"	N	0'- 3"
B	3' - 0"	O	0'- 6"
C	3'- 4"	P	0'- 3"
D	4'- 5"	Q	1'- 4"
E	3'- 7"	R	3'- 8"
F	12'- 2"	S	5'- 0"
G	1'- 0"	T	2'- 0"
H	4'- 0"	U	6' - 0"
I	0'- 3"	V	
J	0'- 3"	W	
K	1'- 0"	X	
L	0'- 2"	Y	
M	3'- 6"	Z	

U.S. AND FOREIGN PATENTS PENDING

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LOW-PROFILE SINGULAIR® BIO-KINETIC® WASTEWATER TREATMENT SYSTEM MODEL TNTLP-500 GPD

REVISED DATE	3-26-07
REVISION	B
DRAWN BY	BDS
APPROVED BY	JMM
DATE	10-16-06
SCALE	NTS
DRAWING NO.	PC-5-7091

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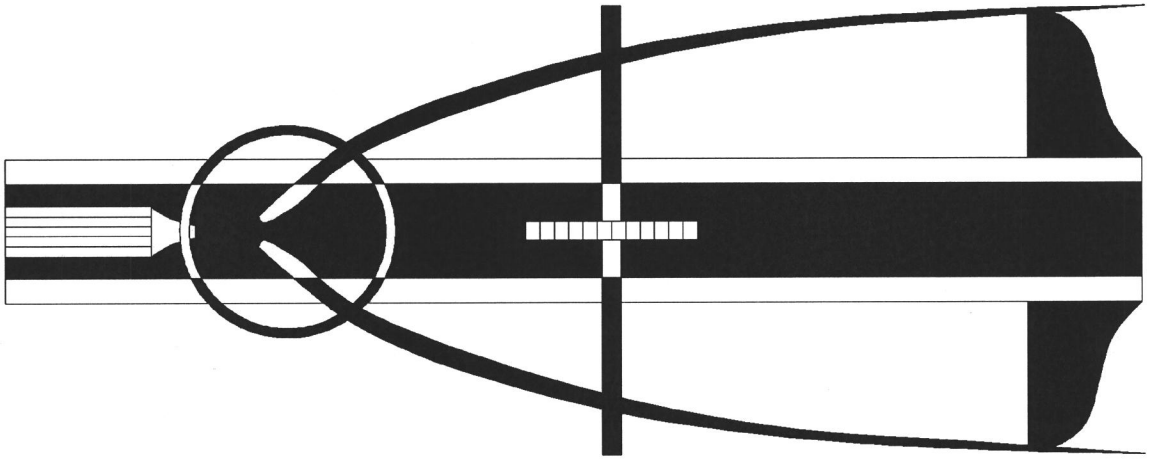
SINGULAIR® BIO-KINETIC®

WASTEWATER TREATMENT SYSTEM MODEL TNT

SPECIFICATIONS

GENERAL SPECIFICATIONS

The contractor shall furnish and install one complete Singulair Bio-Kinetic Model TNT system for Total Nitrogen Treatment with all necessary parts and equipment as described in the following specifications. Treatment of the domestic wastewater shall be accomplished by the extended aeration process with non-mechanical flow equalization, pretreatment of the influent and filtration of the final effluent. In addition to primary, secondary and tertiary treatment of the wastewater flow, the treatment system shall provide nitrification, denitrification, and if required, chlorination and dechlorination of the effluent prior to discharge. All treatment processes shall be contained within reinforced precast concrete tankage meeting the requirements of ACI Standard 318. The wastewater treatment system shall be a Singulair Model TNT as manufactured by Norweco, Inc., Norwalk, Ohio, USA. Systems utilizing fiberglass, steel, or plastic tankage are subject to flotation when dewatered and shall not be considered for this application.



The wastewater treatment system shall be capable of reducing Total Nitrogen without the addition of chemicals, specialized add-on processes or additional components. Nitrification and denitrification shall be accomplished within the chambers of the treatment system prior to effluent disposal. Biological reduction of nitrogen shall occur naturally by autotrophic bacteria, capable of converting ammonium nitrogen to nitrate and heterotrophic bacteria, capable of transforming nitrate to harmless gas. The treatment system shall include precast concrete tankage providing separate pretreatment, aeration and clarification chambers. Principal items of electro-mechanical equipment shall be a 1725 RPM mechanical aerator, UL listed Service Pro control center with MCD technology, Bio-Static sludge return and Bio-Kinetic tertiary treatment device for flow equalization and final filtration of system effluent.

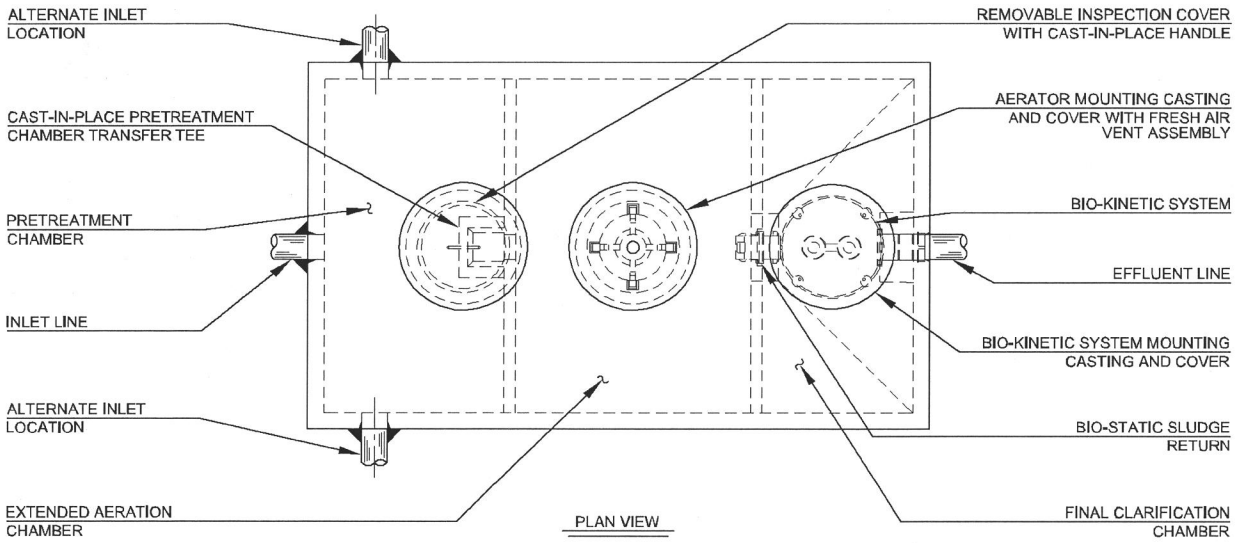
SINGULAIR®

OPERATING CONDITIONS

Total holding capacity of the system shall provide a minimum of 48 hour retention of the daily flow. The pretreatment chamber shall provide at least 18 hour retention, the extended aeration chamber shall provide at least 24 hour retention and the clarification chamber shall provide at least 6 hour retention. The non-mechanical flow equalization device shall increase each individual chamber and total system retention time in direct proportion to loading. Design of the system shall include a compartmented tank and non-mechanical flow equalization device to insure successful treatment performance without upset even when the significant runoff period is six hours. Hydraulic design considerations of the system and flow equalization device shall be such that intermittent peak flow factors as high as four shall not upset hydraulic reliability within the system. System performance in compliance with the requirements of NSF Standard 245 shall be recognized by an ANSI accredited third-party laboratory and be approved for use by the local governing regulatory agency.

PRETREATMENT CHAMBER

The pretreatment chamber shall be an integral part of the wastewater treatment system. All domestic wastewater shall be preconditioned and flow equalized while passing through the pretreatment chamber prior to being introduced to the extended aeration chamber. The outlet of the pretreatment chamber shall be equipped with a discharge tee that extends vertically into the liquid so that only the preconditioned equalized flow from the center area of the chamber is displaced to the extended aeration chamber. The discharge tee and transfer port shall be of adequate size to handle a peak flow factor of four without restricting the outlet and disturbing hydraulic displacement to the extended aeration chamber. A removable inspection cover shall be cast into the top of the pretreatment chamber to allow tank and transfer tee inspection. As a safety measure, the uncovered opening shall be small enough to insure that the tank cannot be entered for inspection or service.



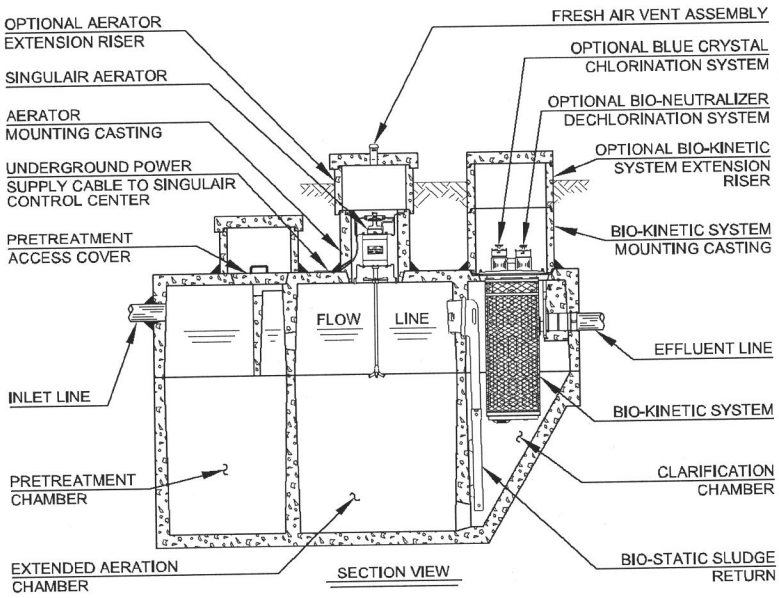
PLAN VIEW

AERATION CHAMBER

The extended aeration chamber shall provide in excess of 24 hour retention of the equalized daily flow. The chamber shall be of sufficient size to provide a minimum of 80 cubic feet of tank capacity per pound of applied BOD. The aeration chamber length-width-depth ratio shall be designed to insure uniform tank mixing and provide optimum treatment. The aeration chamber(s) shall be an integral part of the system flow path and constructed of properly reinforced 5,000 PSI, 28 day compression strength precast concrete. All castings used to construct the precast concrete tankage shall be monolithic units with external and internal walls incorporated into each section.

FINAL CLARIFICATION CHAMBER

The final clarification chamber shall consist of 5 functionally independent zones operating together to provide satisfactory settling and clarification of the equalized flow. An inlet zone shall be provided and shall dissipate transfer turbulence at the flow inlet of the clarification chamber. Its performance shall also eliminate turbulence in other zones of the clarifier. Liquid shall be hydraulically displaced from the inlet zone to the sludge return zone. Hydraulic currents shall sweep settled sludge from the hoppered walls and return these solids via the inlet zone to the aeration chamber. As solids are removed, liquid is displaced to the hopper zone of the clarifier. In this zone, settling by gravity takes place. Three of the four sidewalls are slanted to form a hopper which directs all settled material back to the sludge return zone. Clarified liquid from the hopper zone shall be displaced into the final settling zone to provide additional clarification of the liquid. The liquid is finally displaced to the outlet zone for final filtration and discharge from the system. Non-mechanical equalization of the flow, through all 5 independent zones, shall provide optimal settling and clarification.

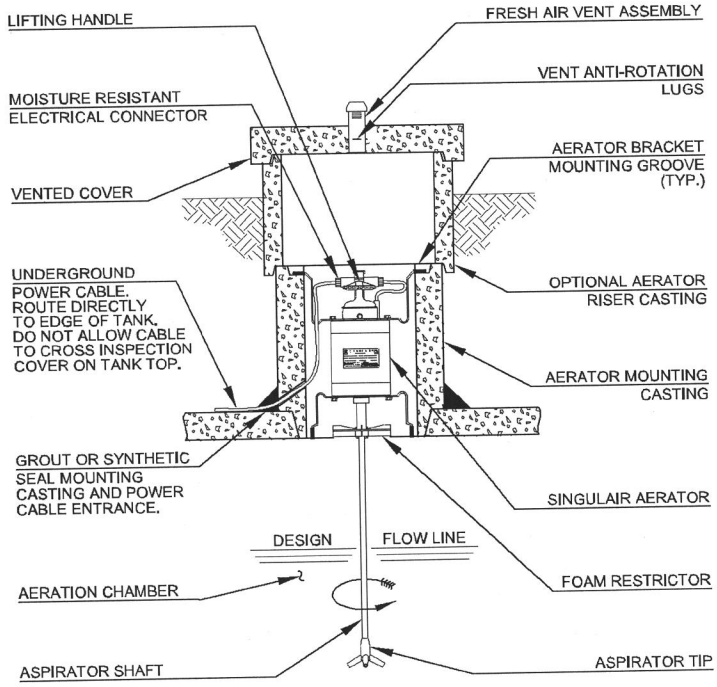


BIO-STATIC® SLUDGE RETURN

A Bio-Static sludge return shall be installed into the cast-in-place opening(s) in the aeration/clarification chamber wall to provide positive return of settled solids. Aeration chamber hydraulic currents shall enter the sludge return(s) and be directed into the sludge return zone of the clarification chamber. The Bio-Static sludge return shall accomplish resuspension and return of settled solids without disturbing the clarified liquid in the final settling zone and outlet zone.

MECHANICAL AERATOR

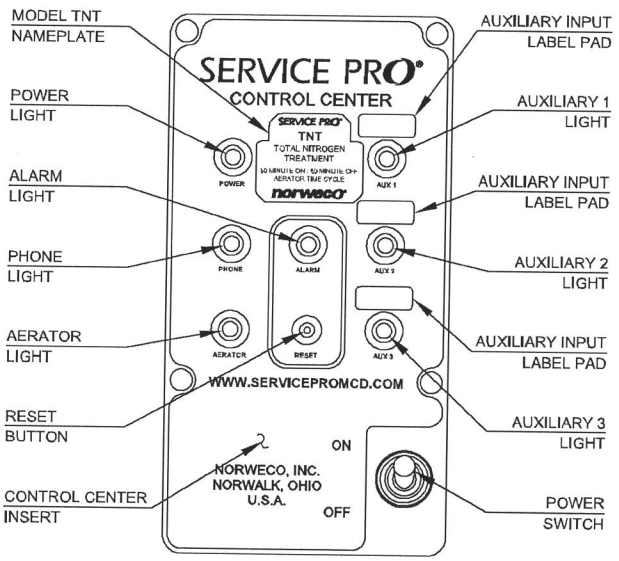
Each Singulair aerator shall be installed in a concrete aerator mounting casting above the aeration chamber. Fresh air shall be supplied through a molded plastic vent assembly cast into the concrete access cover above the aerator. The Singulair aerator shall include plated mounting brackets, NEMA 6 rated electrical connector, UL recognized fractional horsepower motor, molded plastic lifting handle, molded plastic air intake screens, molded plastic foam restrictor, stainless steel aspirator shaft and molded glass-filled nylon aspirator tip. The motor shall contain precision manufactured o-ring type seals installed between the motor shell and the machined aluminum endbells to insure watertight integrity is maintained. Molded Viton elastomer shaft seals shall be utilized to protect the bearings from contamination. Only the stainless steel aspirator shaft and glass-filled nylon aspirator tip shall be installed in contact with the liquid. There shall be no submerged electrical motors, bearings or fixed air piping in the aeration system. Singulair aerator motors shall be designed not to exceed the motor nameplate rating when installed and operated as recommended for the system. The fractional horsepower aerator motor shall be equipped with a foam restrictor to protect the motor against high water and foam. The motor shall be 4 pole, 1725 RPM, 115 volt, 60 Hertz, single phase, ball bearing constructed with a 1.0 service factor. It shall draw less than 4.0 amps when operating at the rated nameplate voltage. Aerator motors without UL recognition have not demonstrated compliance with international electrical standards for safety and reliability and shall not be considered for this application.



BIO-KINETIC®

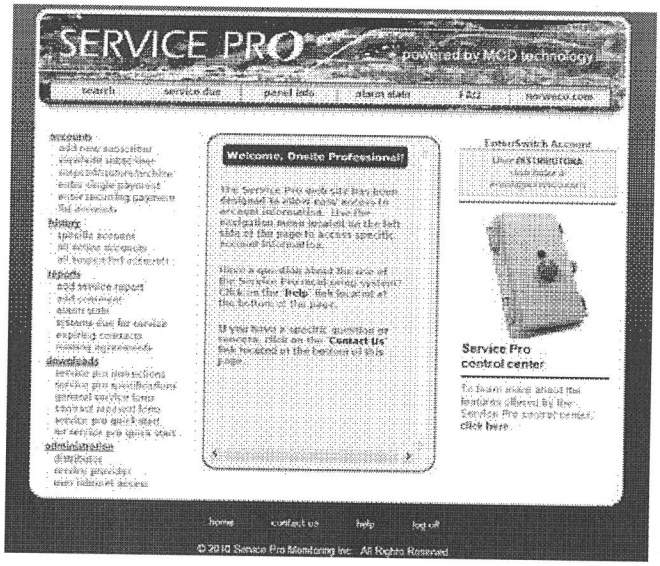
SERVICE PRO® CONTROL CENTER

The Service Pro electrical control center with MCD technology shall provide Monitoring, Compliance and Diagnostic functions for the Singulair treatment plant using a microprocessor based platform. The Service Pro control center shall contain nonvolatile memory to prevent loss of programming in the event of a power failure. The pre-wired controls shall be mounted in a lockable NEMA rated enclosure designed specifically for outdoor use. Each Service Pro control center shall be a UL listed assembly and shall include a factory-programmed timer, alarm light, reset button, power switch, power light, phone light, aerator alarm light and three auxiliary alarm lights. The control center shall monitor all treatment system operating conditions including aerator over current, aerator under current and open motor circuit. In the event the control center detects one of these conditions, power to the aerator shall be interrupted, a diagnostic sequence shall begin and the visual alarm shall activate. After a programmed recovery interval, an automatic restart attempt shall be initiated. If normal aerator operation does not resume during 24 programmed recovery and restart cycles, the audible alarm shall activate and the telemetry system shall report the specific condition to the Service Pro monitoring center. In the event that any of the auxiliary inputs detect abnormal operation of the treatment system auxiliary equipment, the audible and visual alarms shall immediately activate and the telemetry system shall report the alarm condition to the monitoring center. The service provider shall automatically be notified by the Service Pro monitoring center of the specific alarm condition using phone, fax or email.



AERATOR TIME CYCLE

A factory-programmed timer built into the Service Pro control center shall provide a total of twelve hours of aerator operation per day. The non-adjustable timer shall create a 60 minute aeration cycle followed by a 60 minute anoxic cycle during which the aerator shall be off. Use of an aerator timer can seriously affect system performance and operating cost. Systems that have not been performance certified, at a timed aeration cycle, by an independent ANSI accredited testing laboratory shall not be considered for this application.



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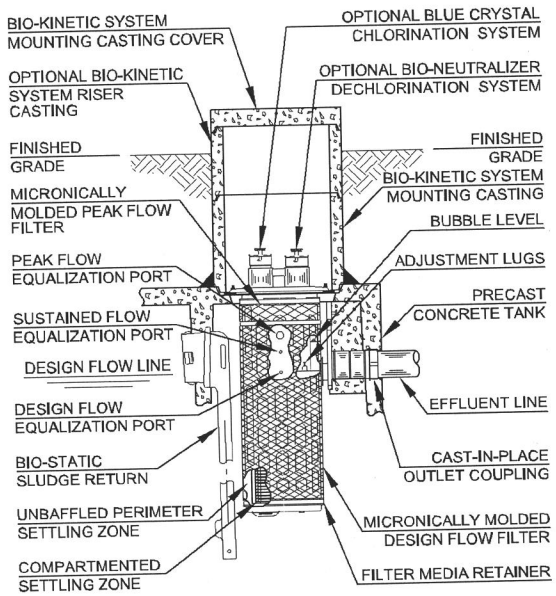
SERVICE PRO® MONITORING CENTER

The Service Pro monitoring center shall include a 128 bit encrypted password protected website for interface with the monitoring center database. Access to the secure website shall be obtained through a unique user name and password that provides tiered access to data from monitored treatment systems. Access level tiers shall include distributors, service providers, regulatory agencies and individual system owners. Distributors and service providers shall be able to create accounts, maintain service records and grant regulatory agencies access to the information. Individual system owners shall be able to view information regarding their own wastewater treatment systems, as well as download and print instructional information. Integrity of stored data shall be maintained through the use of multiple servers operating in geographically isolated locations.

SPECIFICATIONS

BIO-KINETIC® SYSTEM

A Bio-Kinetic system shall be installed in the mounting casting(s) above the clarification chamber. Each Bio-Kinetic system shall provide non-mechanical flow equalization through all plant processes including pretreatment, aeration, clarification, tertiary filtration, chlorination and dechlorination. The assembly shall be supplied with locking lugs and removable moisture/vapor shield and shall consist of a design flow and peak flow micronically molded filter, baffled perimeter settling zone, flow distribution deck, lifting handles, level indicator, adjustment lugs, optional chlorination feed tube, unbaffled perimeter settling zone, solids contact zone, vertical inlet zone, compartmented settling zone consisting of 42 baffled chamber plates, effluent stilling well, final discharge zone, adjustable outlet weir, optional dechlorination feed tube, outlet zone and gasketed discharge flange. All components shall be manufactured from inert synthetic materials or rubber, assembled in circular fashion and connected to a plastic outlet coupling. The outlet coupling shall accept a 4" diameter, Schedule 40, PVC pipe. Each Bio-Kinetic system shall be installed with the inverts of the design flow equalization ports located at the normal liquid level of the clarifier. If intermittent flow rates exceed the capacity of the design flow ports, flow shall be held upstream until the intermittent flow dissipates. If the intermittent flow continues to increase, the liquid level may reach a pair of sustained flow equalization ports. With four ports in use, flow through the system increases while continuing to provide flow equalization to all upstream and downstream processes. Peak flow equalization ports are supplied but should not be required in a properly sized system. Optional Blue Crystal and Bio-Neutralizer tablet feed tubes shall be positioned such that the flow-activated chemical cannot make contact with the liquid upstream of the feed tubes.



FLOW EQUALIZATION

The wastewater treatment system shall include a non-mechanical, demand use, flow equalization device. The device shall control normal residential flow rates and reduce typical residential flow surges. The flow equalization rate shall be dependent upon the specific loading pattern and the duration of flow surges. At the 600 gallon per day design loading schedule of NSF Standard 40 and NSF Standard 245, minimum performance of the device shall equalize daily flow an average of 50%.

BLUE CRYSTAL® CHLORINATION SYSTEM (Optional)

The Singulair system shall be furnished complete with a tablet feeder and a six month supply of Blue Crystal disinfecting tablets. Blue Crystal tablets shall be specifically formulated for consistent chlorine dosage and effluent disinfection to the sustained, variable and intermittent flows that are typical of domestic wastewater treatment systems. The tablets shall be manufactured from pure calcium hypochlorite and contain a minimum of 70% available chlorine. Each tablet shall be $2^{5}/_{8}$" diameter, compressed to a 1" thickness, weigh approximately 5 ounces and be white in color with blue crystals for easy identification. The tablets shall dissolve in direct proportion to the flow rate, releasing controlled amounts of chlorine.

BIO-NEUTRALIZER® DECHLORINATION SYSTEM (Optional)

The Singulair system shall be furnished complete with a tablet feeder and a six month supply of Bio-Neutralizer dechlorination tablets. The dechlorination tablets shall contain active ingredients specially formulated to chemically neutralize both free and combined chlorine. Each tablet shall be $2^{5}/_{8}$" diameter, compressed to a $^{13}/_{16}$" thickness, weigh approximately 5 ounces and be green in color for easy identification. The tablets shall dissolve slowly, releasing controlled amounts of chemical for the instantaneous removal of residual chlorine from the system effluent.

WARRANTY AND EXCHANGE PROGRAM

The manufacturer shall provide a three year limited warranty for each Singulair aerator, Service Pro control center and Bio-Kinetic system purchased from the manufacturer. A comprehensive exchange program offers Singulair owners a lifetime of equipment protection. The distributor shall provide warranty and exchange program details to the regulatory agency, contractor and customer as required.

EQUIPMENT MANUFACTURER

The equipment specified herein shall be the product of a manufacturer having a minimum of seven years experience in the construction of prefabricated wastewater treatment equipment and systems. Bids shall be prepared on the basis of the equipment and material specified herein for purposes of determining the low bid. This is not done, however, to eliminate other products or equipment of equal quality and efficiency. If equipment is to be substituted, approval of such substitution must be made prior to execution of any order. It is assumed that substitution will result in a reduction of cost to the contractor and that if accepted, these savings will be passed along by a reduction in the base bid.

SINGULAIR® MODEL TNT DATA CHART

Designation: Model TNT	500 GPD	750 GPD	1000 GPD	1250 GPD	1500 GPD
Daily Treatment Capacity (Gallons Per Day)	500/600	750/800	1000	1250	1500
Total System Capacity (Gallons)	1300	1600	2300	2850	3400
Number of Singulair Aerators	1	1	2	2	2
Number of Bio-Kinetic Systems	1	2	2	3	3
Number of Bio-Static Sludge Returns	1	1	1	2	2
Drawing Number (PC-5-)	7103	7065	7067	7068	7069

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SINGULAIR® SYSTEM PERFORMANCE

Rivaling the performance of the most advanced wastewater treatment plants in the world, the Singulair system complies with USEPA wastewater treatment guidelines for secondary treatment systems and meets all requirements of NSF/ANSI Standard 40. In ecologically sensitive areas, the most stringent effluent standards are 10 mg/L CBOD and 10 mg/L TSS. Rated Class I after successfully completing the 7 month Standard 40 test protocol, the Model 960 system averaged effluent of 6 mg/L CBOD and 10 mg/L TSS. The Model TNT system averaged effluent of 4 mg/L CBOD, 9 mg/L TSS and 12 mg/L Total Nitrogen.

OPERATIONAL REQUIREMENTS

The Singulair system is designed to treat only domestic wastewater. Domestic wastewater is defined as the waste generated from a typical residence. This includes flows originating from: bathtubs, clothes washers, dishwashers, drinking fountains, water coolers, food grinders, kitchen sinks, lavatories, mop basins, service sinks, shower stalls, sinks, wash sinks, water closets and whirlpool baths. While the use of bio-degradable detergents is recommended, the Singulair system has been designed to handle any reasonable amount of bathroom, kitchen or laundry waste. However, some care should be exercised to insure that non-biodegradable and/or toxic materials are not disposed of via the domestic wastewater plumbing. Do not use the plumbing system for disposal of lint, cooking grease, scouring pads, diapers, sanitary napkins, cotton balls, cotton swabs, cleaning rags, dental floss, strings, cigarette filters, rubber or plastic products, paints and thinning agents, gasoline, motor oil, drain cleaners or other harsh chemicals. These items could plug portions of the plumbing, interfere with biological treatment, accumulate in the treatment system and adversely affect system performance. Never connect roofing down spouts, footer drains, sump pump piping, garage and basement floor drains or water softener backwash to the domestic wastewater plumbing or the treatment system. Water softener backwash will interfere with biological treatment and must be disposed of separately.

ELECTRICAL REQUIREMENTS

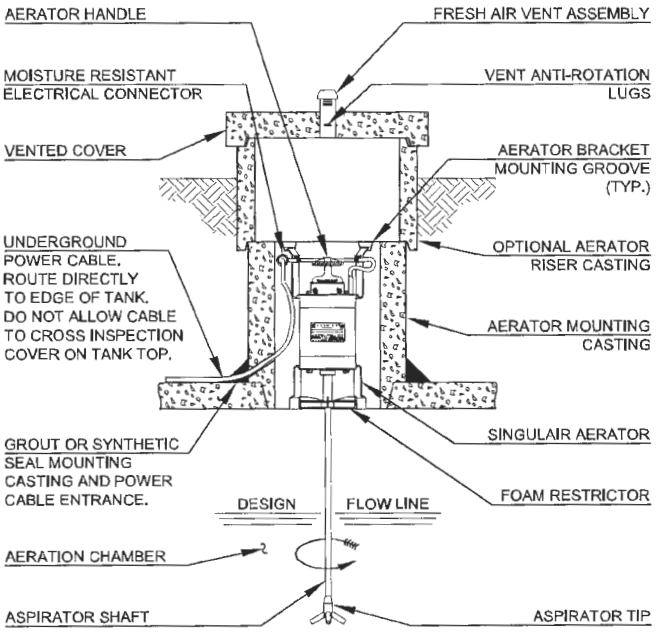
Each Singulair control center must be wired to a dedicated 115 VAC, single-phase circuit at the main electrical service panel. A 15 amp circuit is recommended (10 amp minimum). A pictorial wiring diagram is provided inside the control center enclosure. All electrical work must be performed in accordance with the requirements of the National Electrical Code and all applicable local codes. Electrical connections should be made only by a qualified electrician following proper procedures and using safe tools.

CAUTION: Any time service is required, first shut off the dedicated circuit breaker in the main electrical service panel. Next, shut off the power switch in the Singulair control center. Failure to do so could result in personal injury or equipment damage.

SINGULAIR® AERATOR

The aerator has been specifically designed for use in the Singulair system and includes special alloy and molded plastic parts to prolong aerator life. Aerator bearings are pre-lubricated and sealed. Singulair aerators are installed in a concrete mounting casting above the aeration chamber. Fresh air enters the aerator through four intake ports located under the aerator handle. The air is drawn down the hollow aspirator shaft where it is introduced below the liquid surface. Only the molded plastic aspirator and the lower portion of the stainless steel aspirator shaft are submerged.

The aerator is not designed to run under water and will automatically shut off if a high water condition occurs. If the liquid rises to the level of the foam restrictor, the control center will shut off power to the aerator. Next, an automatic diagnostic sequence begins, as outlined in the section titled "Service Pro Control Center".



Each Singulair aerator is a precision engineered electro-mechanical device. Do not remove it from its installed position. Do not attempt any type of repair. Contact your Singulair service provider if service is needed. Unauthorized tampering or repair will void important provisions of the limited warranty and exchange program.

FRESH AIR VENTING SYSTEM

An aerator vent assembly is cast into the concrete access cover above each aerator. The vent assembly supplies fresh air to the aerator, which is drawn through the aspirator and into the wastewater. Finished landscaping should be maintained six inches below the top of the vented access cover and graded to drain runoff away from the cover. Do not allow plants, shrubbery, mulch or landscaping of any type to restrict the flow of air to the vent assembly or obstruct the access cover.

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SINGULAIR® BIO-KINETIC®

WASTEWATER TREATMENT SYSTEM WITH SERVICE PRO® CONTROL CENTER

MODELS 960 AND TNT OWNER'S MANUAL

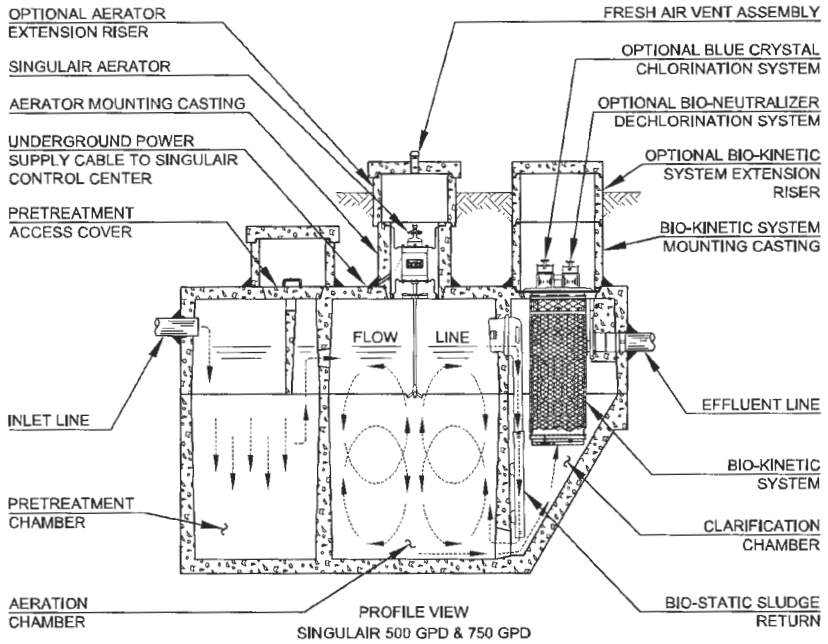
INTRODUCTION

The Singulair system is the finest equipment available and utilizes the most up-to-date wastewater treatment technology. It is a sound investment that protects you and the environment. Please take the time to familiarize yourself with the contents of this manual.

HOW THE SINGULAIR® SYSTEM WORKS

Developed to serve homes and small businesses beyond the reach of city sewers, the Singulair system employs the extended aeration process. Similar to the treatment method used by most municipal wastewater treatment facilities, this process involves a natural, biological breakdown of the organic matter in wastewater.

Wastewater enters the pretreatment chamber where anaerobic bacterial action combines with the effects of gravity to precondition the waste before it flows into the aeration chamber. Once in the aeration chamber, aerobic bacteria utilize the organic matter in the wastewater to biologically convert the waste into stable substances. Following aeration, flow is transferred to the clarification chamber where the effects of gravity settle out biologically active material. The Bio-Static sludge return, located in the clarification chamber, creates hydraulic currents that gently transfer settled particles back to the aeration chamber. As clarified liquids pass through the Bio-Kinetic system, they are filtered, settled and flow equalized. As a result, complete pretreatment, aeration, clarification and final filtration are assured. The Singulair system reliably protects you, your property and the environment.



PROFILE VIEW
SINGULAIR 500 GPD & 750 GPD

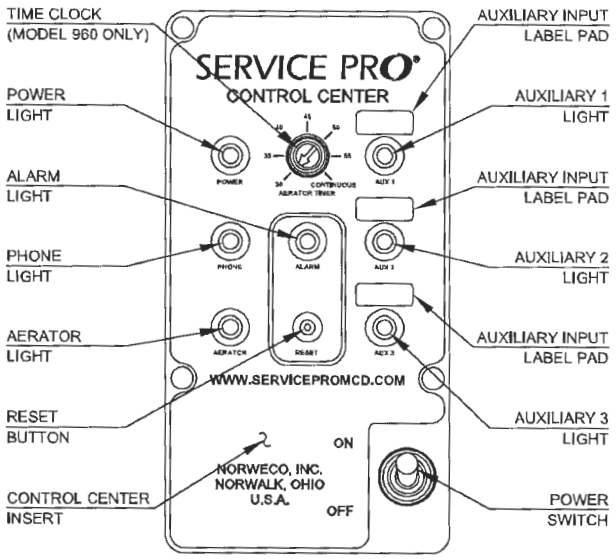
FEATURES AND ADVANTAGES

Singulair tanks are reinforced precast concrete, manufactured by the licensed Norweco distributor. Internal walls and baffles are cast-in-place to insure uniformity and maximum strength. Risers and access covers are either heavy duty plastic or concrete construction. All components within the system that will contact the wastewater are constructed entirely of molded plastic, stainless steel or rubber.

The Singulair aerator is powered by a 1725 RPM, 115 volt, 60 hertz, single-phase, fractional horsepower motor. It is the only electrically powered component in the Singulair system. The aerator has been designed specifically for use in the Singulair system. It costs less to operate and consumes fewer kilowatt hours of electricity than most major appliances.

Singulair aerators are supplied with a Service Pro control center with MCD technology. The NEMA rated control center contains a power switch and time clock that control aerator operation. The local distributor's name, address and telephone number are displayed on the control center cover. All system controls and necessary owner information are conveniently located at your fingertips.

Non-mechanical flow equalization and final filtration is accomplished within the Singulair tank by the Bio-Kinetic system. This revolutionary device is installed in the clarification chamber and connected to the system outlet. Optional chlorination and dechlorination may be included in the Bio-Kinetic system if required. All Singulair components work together to assure complete pretreatment, aeration, clarification and final filtration.



SERVICE PRO® CONTROL CENTER

Every Singulair aerator is supplied with a prewired UL Listed Service Pro control center featuring MCD technology to permit fully automatic aerator operation. The control center provides MONITORING, COMPLIANCE and DIAGNOSTIC functions complete with telemetry for communication with the Service Pro remote monitoring center. If an alarm condition occurs for any reason within the Singulair system or monitored auxiliary equipment, the red alarm light will flash. If aerator operation has been interrupted, the Service Pro control center will attempt to restart the aerator every five minutes for two hours. If the aerator does not restart after two hours, the audible alarm will sound. If the Singulair system is covered by a Service Pro monitoring agreement, the Singulair service provider will be automatically notified and the alarm condition will be displayed on the remote monitoring center website, **www.servicepromcd.com**. Each control center for the Model 960 treatment system is supplied with a time clock adjustable in five minute increments up to continuous run. This clock is factory preset to run 30 minutes per hour and should only be adjusted by an authorized Singulair service provider. Each control center for the Model TNT system is supplied with a non-adjustable time clock.

SERVICE PRO® MONITORING CENTER

When connected to a telephone line, the control center will automatically notify the Service Pro monitoring center of any service required by the Singulair system or accessory components. The Service Pro monitoring center will automatically record the time and date of any alarm condition and post this information to your system's history record accessible at **www.servicepromcd.com**. The monitoring center will also notify your Singulair service provider that the system needs attention and record the time and date when service is performed. All information regarding your system is available to you on the secure, password protected Service Pro website. Contact your Singulair service provider for your user name and password.

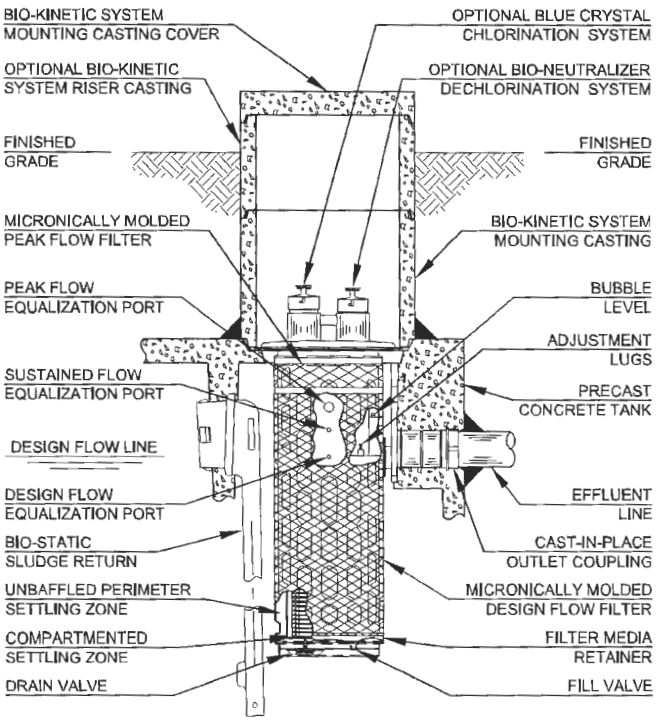
NOTE: The control center regularly communicates with the Service Pro monitoring center using your telephone line and a toll free number. If the control center is using the line when you attempt to place a call, a high pitched digital communication signal will be heard. Hang up all telephones sharing the line and wait a few seconds. This will automatically disconnect the control center and make the line available for use.

BIO-STATIC® SLUDGE RETURN

Each Bio-Static sludge return is installed in the aeration/ clarification chamber wall. Aeration chamber hydraulic currents enter the sludge return(s) and transfer solids from the clarification chamber back to the aeration chamber for additional treatment. The Bio-Static sludge return accomplishes resuspension and return of settled solids without disturbing the contents of the clarification chamber.

BIO-KINETIC® SYSTEM

Bio-Kinetic systems provide non-mechanical flow equalization through all plant processes. The Bio-Kinetic system contains 3 separate filtration zones, 8 independent settling zones, optional chlorination and dechlorination tablet feed systems and serves as its own chlorine contact chamber. When used with Blue Crystal disinfecting tablets, the performance of the Bio-Kinetic system as a chlorination device is certified to NSF/ANSI Standard 46, Section 11. All components are manufactured from plastic or rubber. Your service provider has the necessary training, tools and equipment for removal and cleaning. If your Bio-Kinetic system is in need of service, contact your service provider. During each semi-annual service inspection, your service provider will remove and clean the Bio-Kinetic system or replace it with a unit from their service stock.



NON-MECHANICAL FLOW EQUALIZATION

The patented design of the Bio-Kinetic system provides non-mechanical flow equalization for the Singulair wastewater treatment plant. Equalization reduces incoming hydraulic surges (e.g. typical shower of 10 minutes duration, bathtub discharge of 5 minutes duration, clothes washer discharge of 2 minutes duration and dishwasher discharge of 2 minutes duration) throughout the system. The flow equalization provided by the Bio-Kinetic system causes wastewater to be held upstream of the final outlet during hydraulic surges, which preserves treatment integrity and enhances system operation. The actual rate of equalization varies and depends upon specific loading patterns and the duration of each flow surge. At the design loading pattern used during the NSF/ANSI Standard 40 performance evaluation, the Singulair system equalizes all flow an average of 48%. As a result, hydraulic surges and periods of high wastewater flow are automatically reduced to protect the environment and all treatment plant processes on a demand use, as needed, basis.

BLUE CRYSTAL® RESIDENTIAL DISINFECTING TABLETS

If local regulations require, an initial supply of Blue Crystal disinfecting tablets will be placed in the Bio-Kinetic system chlorine feed tube(s) at system start-up. Specifically formulated for use in the Singulair system, Blue Crystal disinfecting tablets provide efficient and reliable disinfection when effluent chlorination is desirable. Manufactured from calcium hypochlorite, Blue Crystal disinfecting tablets provide effective, economical bacteria killing power. Liquid entering the Bio-Kinetic system contacts the installed Blue Crystal disinfecting tablets, just downstream of the equalization ports. A fully charged feed tube will last an average of six months. During each semi-annual inspection, your Singulair service provider will check system operation, the rate of tablet consumption and install tablets during routine service inspections.

NOTE: USEPA guidelines state "On the average, satisfactory disinfection of secondary wastewater effluent can be obtained when the chlorine residual is 0.5 ppm after 15 minutes contact." Retention time must comply with the controlling regulatory jurisdiction.

CAUTION: The improper handling of Blue Crystal tablets may cause personal injury or property damage. Keep out of the reach of children and do not allow the tablets or feed tube to contact skin, eyes, or clothing. Tablets may be fatal if swallowed and tablet dust is irritating to the eyes, nose and throat. Do not handle the tablets or feed tubes without first carefully reading the product container label, MSDS information and the handling and storage instructions. Mixing of chemicals may cause a violent reaction leading to fire or explosion. For additional information about Blue Crystal tablets contact your Singulair service provider.

BIO-NEUTRALIZER® DECHLORINATION TABLETS

In environmentally sensitive areas, environmental regulations may require the use of Bio-Neutralizer dechlorination tablets. Manufactured as an efficient and dependable means to chemically neutralize both free and combined chlorine, Bio-Neutralizer dechlorination tablets provide consistent reduction or elimination of chlorine residual without unnecessarily reducing the level of dissolved oxygen in the treatment system effluent. Bio-Neutralizer dechlorination tablets utilize a unique chemical mixture for chlorine reduction and environmental protection. As liquid passes through the final discharge zone of the Bio-Kinetic system, the flow contacts the installed Bio-Neutralizer tablets and residual chlorine is removed from the system effluent. A fully charged Bio-Neutralizer feed tube will last an average of six months. During each semi-annual inspection, your Singulair service provider will check system operation, the rate of tablet consumption and install tablets during routine service inspections.

CAUTION: Bio-Neutralizer tablets or feed tubes should not be mixed with Blue Crystal tablets. Do not handle the tablets or feed tubes without first carefully reading the product container label, MSDS information and the handling and storage instructions. For additional information about Bio-Neutralizer tablets contact your Singulair service provider.

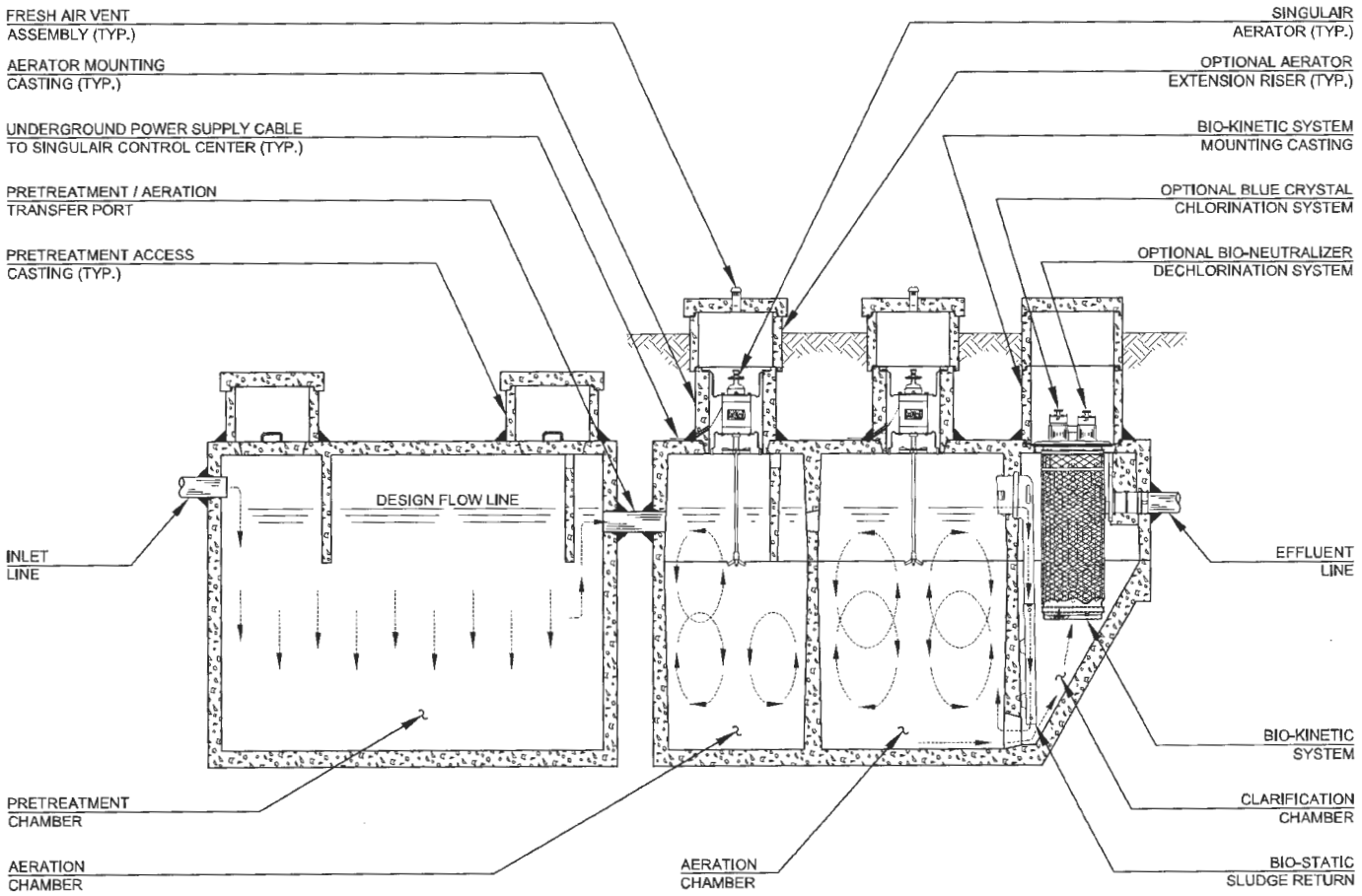
NO OWNER MAINTENANCE

The Singulair system is inspected and serviced by a local, factory-trained service provider, therefore, no owner maintenance is required during the warranty period. The Singulair system does not require pumping as often as a septic tank. Under normal use only the pretreatment chamber should be pumped. How often pumping is necessary depends on system use. The local Singulair service provider will inspect the aeration chamber contents and plant effluent at six month intervals to determine if the pretreatment chamber is discharging excessive solids. Every three years, the pretreatment chamber should be inspected. The pretreatment chamber will normally require pumping at three to five year intervals. Contact your local service provider prior to tank pumping for complete information on removal of equipment, access to individual chambers, coordination of services and proper disposal of tank contents. A tank pumping service licensed by the local regulatory agency must be used for removal and disposal of tank contents. The tank pumper should consult with local authorities to determine the proper disposal method.

If a period of intermittent use, or an extended period of non-use of the Singulair system is anticipated, contact your Singulair service provider for instructions. Your service provider has comprehensive Singulair service instructions and has been factory-trained in troubleshooting procedures. Contact your service provider if you require service or information regarding tank pumping.

SINGULAIR® SERVICE PROGRAM

Semi-annual service inspections, at six month intervals for the first two years of system operation, are provided by your local Norweco distributor and are included in the original purchase price of the Singulair system. Costs for travel and labor are not charged to the owner. During an inspection, each mechanical aerator, Bio-Kinetic system and other plant components are serviced as outlined in the Singulair Service Manual. After the initial two year service program is completed, the local service provider will provide continued service at the owner's option. The service program should be renewed by the owner to insure maximum system performance.



PROFILE VIEW
SINGULAIR 1000 GPD, 1250 GPD & 1500 GPD

Ask your Singulair service provider about a renewable service contract. If you allow service coverage to expire, you can still obtain the professional assistance of a factory-trained technician. However, these special service calls will be performed on a time and materials basis. Professional service is important to proper system operation and should not be allowed to lapse. Be sure to consider the advantages of a renewable service contract.

The Singulair service provider will perform the following services during each service inspection:

- ✓ Check aerator operation
- ✓ Check aerator power consumption
- ✓ Check aerator air delivery
- ✓ Clean stainless steel aspirator shaft
- ✓ Clean aspirator tip
- ✓ Clean fresh air vent in concrete cover
- ✓ Inspect aeration chamber contents
- ✓ Check operation of control center
- ✓ Adjust time clock when required
- ✓ Remove the Bio-Kinetic system
- ✓ Scrape the clarification chamber
- ✓ Inspect the Bio-Static sludge return
- ✓ Inspect outlet coupling
- ✓ Install a clean Bio-Kinetic system
- ✓ Fill Blue Crystal feed tube
- ✓ Fill Bio-Neutralizer feed tube
- ✓ Inspect effluent quality
- ✓ Inspect outlet line
- ✓ Inspect ground water relief point
- ✓ Inspect effluent disposal system
- ✓ Complete 3-part service record
- ✓ Hang owner's record on front door
- ✓ Enter record into **www.servicepromcd.com**
- ✓ Mail health department notification

WARRANTY REGISTRATION

A Warranty Registration Card was included with the Model 206C aerator before it was shipped from the factory. If this card has not been returned to Norweco, complete and mail it immediately. If it is not returned within thirty days of the installation date, the three year limited warranty and lifetime aerator exchange program will begin on the date of component shipment from the factory.

Remove the aerator model number and serial number record card and store it in a safe location with this Owner's Manual for future reference. If it is necessary to call your service provider for service, make note of the information on the control center data plate and the aerator serial number before calling. Warranty and service records are cross-indexed by owner name, aerator serial number or control center serial number. Supplying the aerator serial number and control center serial number with the service request will give the service provider a ready reference so that changes in system ownership will not delay service.

SINGULAIR® LIMITED WARRANTY

The Singulair aerator enjoys the distinction of being the only aerator on the market today backed by a lifetime warranty and exchange program. Each Singulair aerator, Service Pro control center, Bio-Kinetic system and any other components manufactured by Norweco, are warranted to be free from defects in material and workmanship, under normal use and service, for a period of three years from the date of purchase. The three year limited warranty is included in the original purchase price of every Singulair system. The comprehensive aerator exchange program offers Singulair owners a lifetime of protection. Owners with a Singulair system may exchange any aerator of any age for a replacement unit at a prorated cost. If the Singulair aerator or Service Pro control center fails, do not use or dismantle the unit. The local, licensed distributor has detailed warranty and exchange information and should be contacted for service or replacement instructions.

SERVICE PRO® SECURITY LOG IN

For your convenience, record your **www.servicepromcd.com** access information here:

User name:	**Password:**

SUPPLEMENTAL SERVICE RECORD

For your reference, please document service performed on the following chart:

DATE	DESCRIPTION

norweco®

Engineering the future of water and wastewater treatment

DISTRIBUTED LOCALLY BY:

220 REPUBLIC STREET
NORWALK, OHIO, USA 44857-1156
TELEPHONE (419) 668-4471
FAX (419) 663-5440
www.norweco.com

NORWECO® NORWALK WASTEWATER EQUIPMENT COMPANY

SINGULAIR® BIO-KINETIC®

WASTEWATER TREATMENT SYSTEM

TANK PUMPING INSTRUCTIONS

These instructions provide a general guideline concerning when and how to pump out the Singulair system. This literature supplements other instructional materials included in the Singulair Bio-Kinetic System Service Manual.

In order to maximize performance, protect system components and insure protection of the surrounding environment, the Singulair system should be thoroughly checked every six months by a factory-trained Norweco service technician. An initial service program that provides a minimum of four service inspections during the first two years of system operation is included in the system purchase price. Renewable service contracts to extend these routine inspections after the initial program expires are available from the local licensed Norweco distributor.

The pretreatment chamber of the Singulair system will periodically require pumping. Because the Singulair system is a biological treatment device, the time frames listed within these instructions are estimates. Actual pumping frequency will depend on the amount and strength of the wastewater being treated.

Handling and disposal of pretreatment chamber contents, referred to as septage, or the contents of the aeration and clarification chambers, referred to as biosolids, are regulated by local, state and federal authorities. Disposal options may include land application, lagoon treatment, municipal wastewater treatment or landfill disposal. Prior to arranging for tank pumping, contact the Norweco distributor to obtain complete information on access to chambers, removing equipment, coordination of services and disposal of tank contents.

During Singulair system installation and backfilling, do not allow dirt or mud to enter the system. Once in the system, dirt or mud will form a heavy sludge which will affect settling characteristics, interfere with filtration and degrade effluent quality. If dirt or mud enters the system, it must be removed to insure proper system operation. Removing the dirt or mud may require repeated flushing and tank pumping. For additional details refer to Singulair Tank Delivery and Setting instructions.

INTRODUCTION

The Singulair system is a biological treatment device and should not require pumping as frequently as a septic tank. Septic tanks are designed to store solids and perform limited biological treatment. Frequent pumping of a septic tank is mandatory to remove and dispose of these solids before they discharge from the tank. The Singulair system is designed to biologically treat all incoming wastewater and return only a high quality effluent to the environment. The multiple operating processes contained within the plant accomplish primary, secondary and tertiary treatment in each Singulair system. The pretreatment chamber of the Singulair system is designed to retain non-biodegradable solids and allow biodegradable solids to flow into the aeration chamber. The aerobic treatment process in the Singulair system utilizes these biodegradable solids to convert the wastewater into carbon dioxide and water. This natural biological process minimizes the accumulation of solids and eliminates the need to pump the system as frequently as a septic tank. Because the Singulair system utilizes the biodegradable material found in wastewater to perform biological treatment, pumping the system more often than needed will not improve operational performance. Removal of the solids in the Singulair system will be required when indicated by an inspection or evaluation as outlined herein.

WHEN TO PUMP

Norweco distributors provide maintenance and service inspections free of charge at regular six month intervals during the initial warranty period. These routine service inspections will determine if a pretreatment chamber evaluation is necessary. The pretreatment chamber should be evaluated by a factory-trained technician at least every three years to determine if pumping is required. Pumping of this chamber by a licensed tank pumping and disposal service will likely be necessary at 3 to 5 year intervals, based on variations in system occupancy, usage and loading.

ROUTINE SERVICE INSPECTIONS

Semi-annual service inspection procedures are outlined in detail in the Singulair Bio-Kinetic System Service Manual. These routine service procedures include inspection of the aeration chamber, clarification chamber and effluent line to determine if the pretreatment chamber should be evaluated. A brief outline of these routine service procedures, as well as the detailed steps required to perform a comprehensive pretreatment chamber evaluation, are listed here. The results of the routine service inspection, pretreatment chamber evaluation and tank pumping (when performed) should be noted on the Service Inspection Card.

AERATION CHAMBER INSPECTION

A summary of the aeration chamber inspection procedure is listed below. For complete details on aeration chamber service, refer to the Singulair Service Manual.

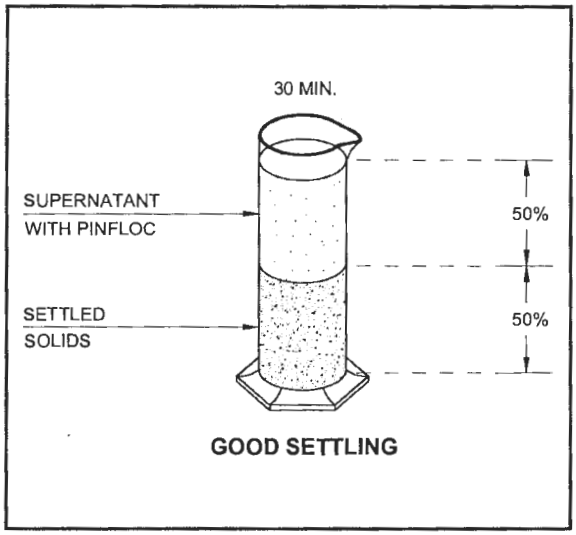
CAUTION: Any time an aerator or service pump is connected or disconnected, first shut off the selector switch in each Singulair control center. Failure to do so could result in personal injury or equipment damage.

1. Remove the vented concrete aeration chamber access cover and set aside.

2. Unplug the aerator and secure the closure cap in position to protect the electrical connector. Remove one end of the drip shield, and leave the other end attached to the aerator air intake.

3. Lift the aerator straight up out of the access opening and lay it flat on the vented cover. DO NOT bump the aspirator shaft or rest the aerator on the aspirator shaft.

4. Perform a settleable solids test using a graduated cone or other clear container. For this test, an aeration chamber sample should be collected within 2-3 minutes after turning off the aerator. See "Settleable Solids Test" section of these instructions for details.



GOOD SETTLING

5. Loosen the two set screws on the bottom of the intermediate shaft and remove the aspirator shaft.

6. Clean any debris from the aspirator shaft and flush the inside of the shaft with a hose.

7. Visually check the aeration chamber surface for the presence of grease or oil. An accumulation of these materials indicates the pretreatment chamber should be evaluated.

8. Check the aeration chamber for the presence of non-biodegradable materials, paper, mop fibers, hair, grease or oil. A significant accumulation of these materials in the aeration chamber indicates the pretreatment chamber should be evaluated.

Repeat steps 1-8 for Singulair systems with multiple aeration chambers and aerators.

NOTE: Do not replace the aerator(s) until the Bio-Kinetic system(s) have been removed from the clarification chamber and properly serviced.

SETTLEABLE SOLIDS TEST

A settleable solids test should be conducted as part of the aeration chamber evaluation during each routine service inspection to monitor system performance.

Using a graduated cone or other clear container, dip into the aeration chamber to a depth of 2 ½ feet and collect a sample of the liquid. Collect this sample within 2-3 minutes after turning off the aerator, before the aeration chamber contents begin to settle. Set the container on a level surface and allow the solids to "settle" for 30 minutes while you complete the service inspection. The container should not be disturbed during the test.

After 30 minutes, read the level of solids and compare it with the total liquid volume in the container. Calculate the percentage of settled solids volume (i.e. ½ full of solids equals 50%). If the settled material contains large pockets of clear liquid, estimate the volume of these pockets and reduce the settled solids reading by that amount. A settled solids reading of up to 75% indicates no adjustments are necessary. Note : The solids should settle and compact within the 30 minute test. System start-up, or periods of low organic loading will result in solids that are too light to settle, and will appear as a full container with no clear separation. This should not be interpreted as having excess solids and system operation can continue without adjustment.

A settled solids level greater than 75% indicates excessive solids in the aeration chamber and that the pretreatment chamber may need to be pumped. In this case, a pretreatment chamber evaluation must be performed. Refer to the "Pretreatment Chamber Evaluation" section of these instructions for more details. If the pretreatment chamber evaluation indicates pumping is not required, the aerator operating cycle should be increased. Consult the local regulatory agency and the Singulair Time Clock Setting Instructions before adjusting the aerator operating cycle.

In Singulair systems with more than one aerator, the settleable solids test should be conducted on a sample from each aeration chamber. The results of all tests should be averaged to determine the appropriate course of action. If test results indicate an aerator time cycle adjustment is necessary, adjust each time clock to operate on identical run cycles.

The results of the settleable solids test, and any adjustment made to the system time cycle, should be recorded on the Service Inspection Card.

AMERICAN MANUFACTURING LIMITED WARRANTY

For one year (12 months) after the date of purchase, American Manufacturing Company, Inc. will repair or replace any product or portion thereof which proves to be defective due to materials or workmanship of American Manufacturing. We reserve the right to repair or replace defective materials at our discretion. This warranty does not cover the following conditions:

1. Defects or problems caused by improper installation or maintenance of materials.
2. Abuse, neglect or accidental damage of products.
3. Normal maintenance or upkeep of products.
4. Lighting, war, floods, or other acts beyond our control.
5. Misapplication of our products for their designed purpose, or misapplication according to local, state or national codes when in effect.
6. American Manufacturing Company or its representatives are not responsible for the labor for the replacement of defective parts.

Defective or warranted materials must be returned to us or a place designated by American Manufacturing. All returns must be accompanied by a return authorization number supplied by American Manufacturing.

American Manufacturing will in no way be responsible for any losses or damages incurred by failure of equipment, parts or service. NOTE: Some states do not allow exclusion of damages so this may not apply to you. There are no other warranties written or implied.

INTRODUCTION

Congratulations! You are now the owner of a state of the art wastewater treatment and recycling system by American Manufacturing Company, Inc. We have been in business for over 20 years and are considered one of the leaders in the On-Site Wastewater industry. With a staff having over 100 years collective experience in providing solutions to new sites and sites in need of repair, we are able to deliver an ecological, economical, easy to install and off-the-shelf ***Perc-Rite® Drip*** to owners like yourself.

When and How to use manual

This owner's manual should be read cover to cover initially, and then as needed to answer any questions or assist the owner in fulfilling their maintenance and inspection responsibilities.

When and Where to call for assistance or get additional information

If at any time you have a question about the ***Perc-Rite® Drip*** or observe any alarm or unusual condition, you should call your qualified service representative or installing contractor as soon as possible. The owner should record in the back of this manual, the contact name and telephone number of the qualified service representative and installing contractor. If further assistance is needed, call American Manufacturing Company, Inc. at 800-345-3132, or visit us *at www.americanonsite.com*.

Overview of Manual

The manual is organized to cover safety precautions and warnings, an overview of the ***Perc-Rite® Drip*** components, and the owner's responsibility. A startup log and limited warranty are in the back of this manual.

SAFETY PRECAUTIONS AND WARNINGS

The owner or operator of the ***Perc-Rite® Drip*** should take precautions consistent with operators working with sewage and/or electricity while working with, or around any of the system components.

Electrical Hazards

The ***Perc-Rite® Drip*** incorporates pump(s), float switches, relays and many electrical components that use 230 volts, 120 volts or 24 volts AC. Improper use of equipment can cause an electrical shock and may lead to serious injury or death.

Sewage Hazards

Proper attention should be given to cleanup when working in and around the septic and pump tanks and wastewater handling equipment to insure that disease causing bacteria are not transmitted to persons or contact surfaces. The septic and pump tanks can allow for a toxic buildup of poisonous gasses that can lead to serious injury or death if inhaled.

Heavy Lifting Hazards

The owner and/or operator should exercise proper caution when lifting heavy system components, such as pump tank lids. Improper lifting of heavy components can lead to loss of limb and/or mobility.

CLARIFICATION CHAMBER INSPECTION

A summary of the clarification chamber inspection procedure is listed below. For complete details on clarification chamber service, refer to the Singulair Bio-Kinetic System Service Manual.

1. Remove the concrete Bio-Kinetic system access cover and set aside.

2. Remove the Bio-Sanitizer and Bio-Neutralizer feed tubes if the Bio-Kinetic system is so equipped. Do not allow the tubes to touch.

3. Lower the rigid end of the service pump suction hose into the rectangular opening in the flow deck.

4. Place the service pump flexible discharge hose into the aerator mounting casting.

5. Begin pumping the contents of the Bio-Kinetic system into the aeration chamber.

6. Place the lifting tool under the lifting handles. As the Bio-Kinetic system begins to rise, guide the unit straight up. Do not allow the Bio-Kinetic system to tilt or rub against the tank opening.

7. As the Bio-Kinetic system becomes fully buoyant and rises near the top of the mounting casting, unplug the pump and set it aside with the pump suction and discharge hoses.

8. Remove the de-watered Bio-Kinetic system from the mounting casting. Set the system on the upside down lid of the service container.

NOTE: Repeat Steps 1-8 for clarification chambers with multiple Bio-Kinetic systems.

9. Reinstall the Singulair aerator(s) as outlined in the Singulair Aerator Service Instructions. The aerator(s) must be in operation while the remaining clarification chamber service is performed.

10. Check the surface of the clarification chamber for the presence of grease or biologically untreatable material. A significant accumulation of these materials would indicate that the pretreatment chamber should be evaluated.

11. With the aerator running, use the hopper scraping tool to gently scrape each wall of the hopper. Move the tool all the way down to the bottom of the clarification chamber, gently scraping the wall.

12. Complete the clarification chamber service as outlined in the "Clarification Chamber" section of the Singulair Bio-Kinetic System Service Manual.

13. Make appropriate notations on the Singulair Service Inspection Card and on the Owner's Manual.

EFFLUENT LINE INSPECTION

Check the groundwater relief point installed in the effluent line to make sure it is free of obstruction. An accumulation of paper, fibers, hair or grease indicates that the Singulair system needs to be pumped. If there is a surface discharge point, make sure that it is free of debris, foam, mud, etc. Make appropriate notations on the Service Inspection Card.

PRETREATMENT CHAMBER EVALUATION

The pretreatment chamber must be evaluated within three years of system startup or the most recent tank pumping. An evaluation must also take place any time a routine service inspection indicates the chamber may be discharging excessive solids. This evaluation includes measuring the depth of the floating scum and settled sludge layers to determine if pumping is required. If the pretreatment chamber evaluation indicates the chamber does not require pumping, these evaluations should be repeated annually until pumping is necessary.

PRETREATMENT CHAMBER INSPECTION

A complete pretreatment chamber inspection procedure is listed below. The results of the inspection should be noted on the Service Inspection Card.

1. If the pretreatment chamber access opening is not equipped with a riser and cover at grade, dig down to the access opening in the top of the tank. The opening is in line with the access opening for the aeration chamber and the system outlet. The access cover should not be more than 12" below grade.

2. Remove the cover(s) and be careful not to allow dirt or mud to enter the tank.

3. Visually check the surface of the pretreatment chamber for an accumulation of grease, oil or non-biodegradable materials.

4. Using the hopper scraping tool, gently probe the surface of the chamber to determine the thickness of the scum mat. Force the tool down through the scum mat, rotate the tool one quarter turn, then raise it until the bottom of the mat is felt. If the depth of the floating scum layer has reached the bottom of the discharge tee, the chamber should be pumped.

5. To check the depth of the settled sludge layer, secure a rough white towel to the handle of the hopper scraping tool and lower it to the bottom of the chamber.

Lower the tool behind the discharge tee (baffle) to avoid floating particles. Push the tool through the settled sludge layer to the bottom of the tank. Wait several minutes and carefully remove the tool. The depth of the settled sludge layer will be shown by a dark line on the towel. If the settled sludge layer has accumulated to the bottom of the discharge tee, the chamber should be pumped.

Review the "Operational Requirements" section of the Owner's Manual with the owner. If lint, grease, scouring pads, diapers, sanitary napkins, cotton balls, cotton swabs, cleaning rags, dental floss, strings, cigarette filters, rubber or plastic products, paints, thinning agents or other harsh chemicals are discovered in the system, the owner should be cautioned regarding proper use of the system.

WHAT TO PUMP

When pumping is required, normally it is necessary to pump only the pretreatment chamber if the Singulair system has been serviced at regular 6-month intervals. If service has been interrupted for an extended period of time, or if mud or toxic material is present, it may be necessary to pump out the entire system. When pumping, it is not necessary to wash down the compartments unless significant quantities of grease, hair, fibers, mud, toxic substances or biologically untreatable materials are present. The following chart provides volumetric capacities within each Singulair system:

SYSTEM CAPACITY

Singulair Model	Pretreatment Chamber	Total System
500 GPD	450 Gallons	1300 Gallons
750 GPD	550 Gallons	1600 Gallons
1000 GPD	1000 Gallons	2300 Gallons
1250 GPD	1250 Gallons	2850 Gallons
1500 GPD	1500 Gallons	3400 Gallons

HOW TO PUMP THE SINGULAIR SYSTEM

A complete Singulair system pumping procedure is listed below. Prior to tank pumping, contact the Norweco distributor to obtain complete information on equipment removal and reinstallation.

1. If any portion of the Singulair system requires pumping, contact a tank pumping service licensed by the local regulatory agency. The septage or biosolids from the system must be removed and disposed of in a manner consistent with federal, state and local regulations.
2. Refer to the "System Capacity" table and advise the pumping service what volume of liquid is to be removed from the system.
3. For pumping the pretreatment chamber only, remove the pretreatment chamber access cover and insert a suction hose into the chamber. Lower the hose until it contacts the bottom of the tank. Withdraw the hose approximately 2" and connect the opposite end to the pump being used to evacuate the chamber.
4. Break up the scum mat to facilitate pumping. Activate the pump and remove the pretreatment chamber contents. It is not necessary to wash down the sidewalls or tank bottom.
5. If the solids in the chamber are so concentrated that the suction hose cannot withdraw them, tank contents may be back-flushed to break up the solid matter.
6. If special circumstances require the total system to be pumped, contact the local Norweco Singulair distributor. Each aerator and Bio-Kinetic system must be removed for full access to all chambers and to prevent damage to components.

   Note: Access to the contents of the aeration and clarification chambers of Singulair systems should be made only through an aerator mounting casting. Never insert the hose through the Bio-Kinetic system mounting casting.
7. A Singulair system that has been inactive for an extended period of time or that has accumulated mud or dirt during installation may have to be washed down with fresh water and pumped out. This process may have to be repeated for proper system operation.
8. After pumping, fill all chambers to capacity with water. Return all aerators, Bio-Kinetic systems and access covers to their proper locations, as outlined in the Singulair Service Manual. Be sure each control center selector switch is in the "automatic" position, and each enclosure is secured with a tamper evident seal.

Following tank pumping, no system adjustments are necessary for biological treatment to continue. Semi-annual service inspections by a factory-trained Norweco service technician should be conducted to insure long term system performance.

DISTRIBUTED LOCALLY BY:

NORWECO®
NORWALK WASTEWATER EQUIPMENT COMPANY

220 REPUBLIC STREET
NORWALK, OHIO, USA 44857-1196
TELEPHONE(419)668-4471
FAX(419)663-5440

System Component #2 – Absorption Area Dose Tank & Pump

Member N. C. B. V. A.

Babylon
VAULT
SINCE 1930

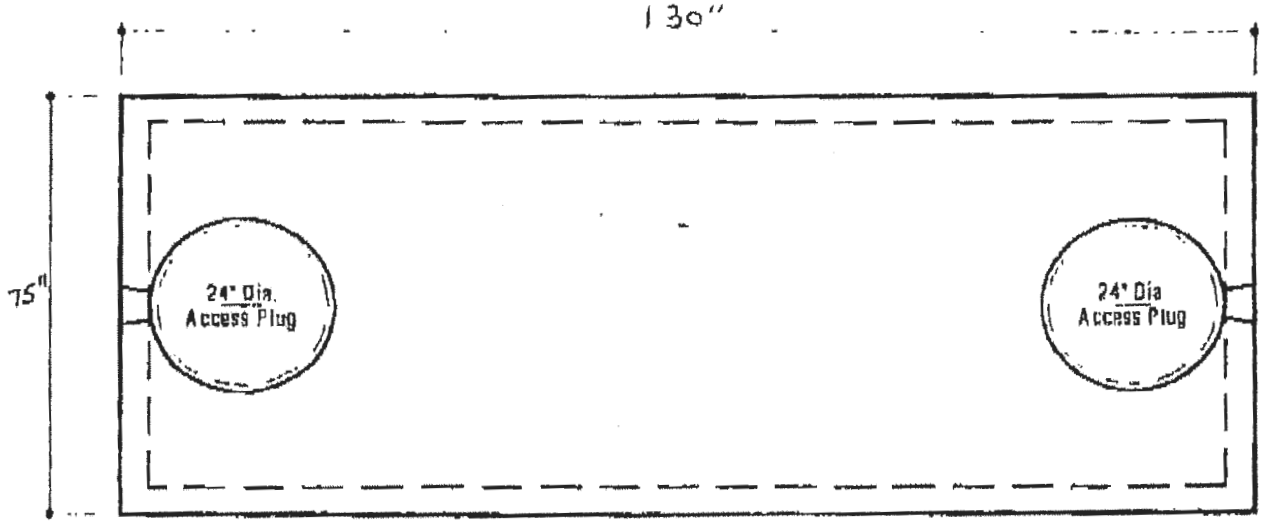
Member P. C. B. V. A.

Phone:
410-848-0393
Fax:
410-848-3551

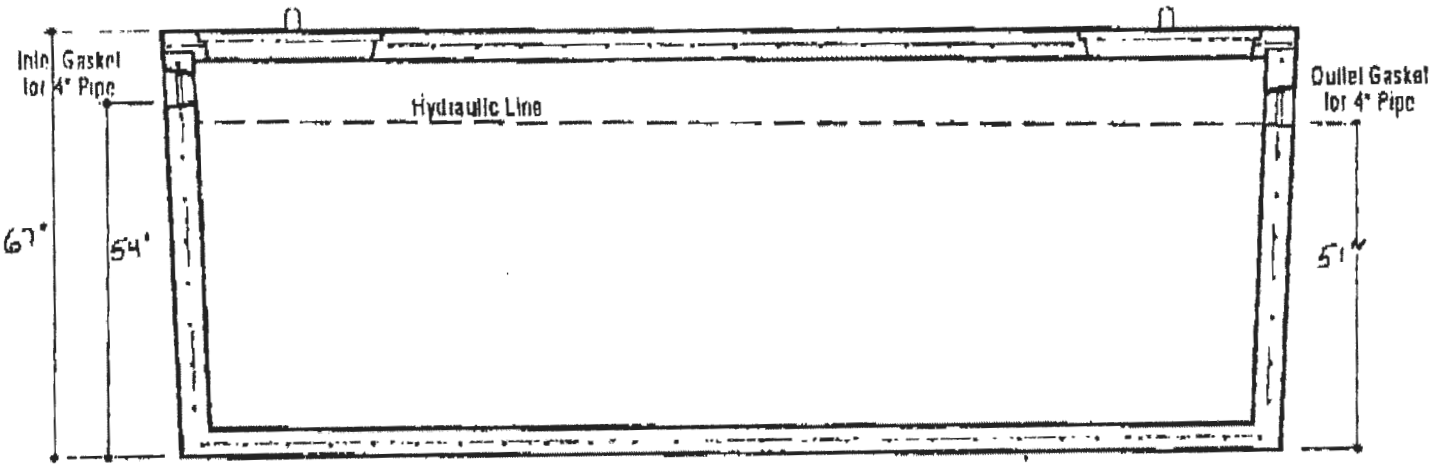
Burial Vaults - Septic Tanks

925 Wakefield Valley Road
New Windsor, MD 21776

1500 gallon septic or pump TANK



Top VIEW



side view

Design Data & General INFO.

(1) Concrete STRENGTHS = 6000 psi @ 28 days
(2) Cement PORTLAND Type I/II per ASTM C-150-92
(3) Admixtures & Plasticizers per ASTM C-260 & C-494-92
(4) Reinforcing per ASTM A-185 min 1-½ inch cover
(5) Top SLAB SEALED with Butyl TAPE
(6) 4" walls, bottom, Top

www.americanonsite.com

Phone: 800-345-3132
Fax: 540-825-1785

AMERICAN MANUFACTURING COMPANY, INC.

EFFLUENT DRIP PUMP
Model Series: PUTURB15

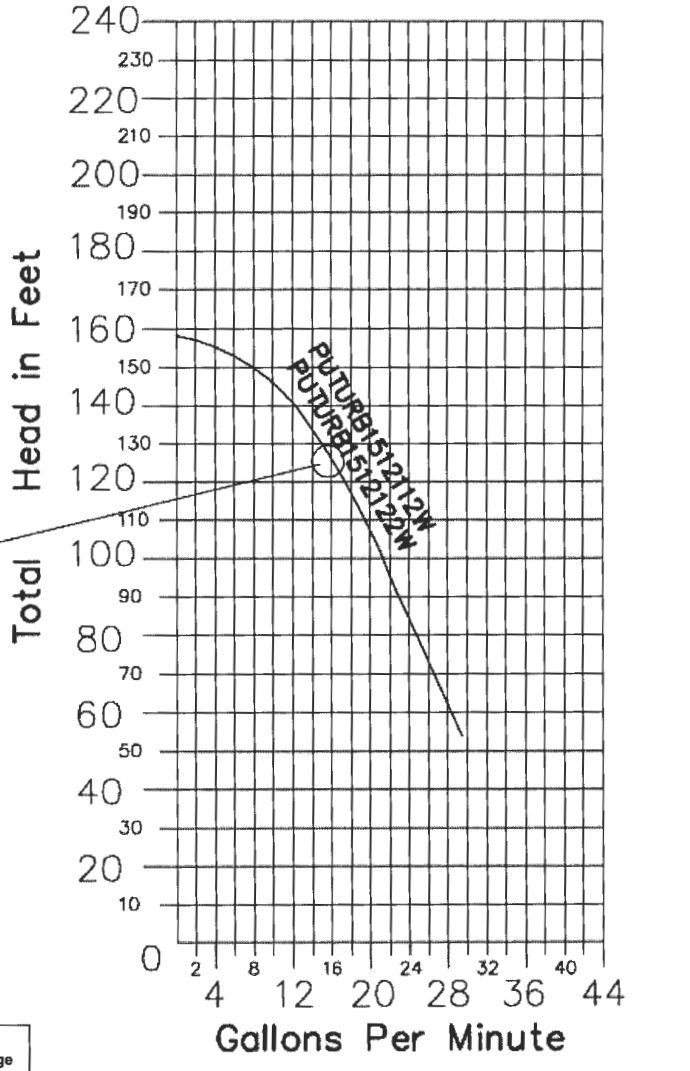
PERC-RITE®
PUMP
PUTURB15

FEATURES

- **Non-Metallic Parts are Effluent Compliant:** Impellers, diffusers constructed of glass filled polycarbonate or Noryl, engineered composites. Both materials are corrosion resistant.
- **Bearing Discharge Head:** State of the art engineered composite material for superior strength and corrosion resistance. Loop for safety line molded into head.
- Warranted for one year against failure due to workmanship and materials.
- **Stainless Steel Casing:** Polished stainless steel is attractive and durable in the most corrosive effluent.
- **Hex Shaft Design:** Six sided shafts for positive impeller drive.
- **Inlet Strainer:** Molded suction strainer built into motor adapter.

TDH for Backflushing
Most Limiting Condition

- **Motor:**
  - Built-in surge arrestor is provided on single-phase motors.
  - Stainless steel splined shaft.
  - Hermetically sealed windings.
  - Replaceable motor lead assembly.
  - UL 778 and CSA recognized.
  - NEMA mounting dimensions.
- Standard 100" jacketed power cord.
- **Agency Listings:** All complete pump/motor assemblies are UL778 and CSA listed. All Franklin Electric Motors are UL778 recognized.



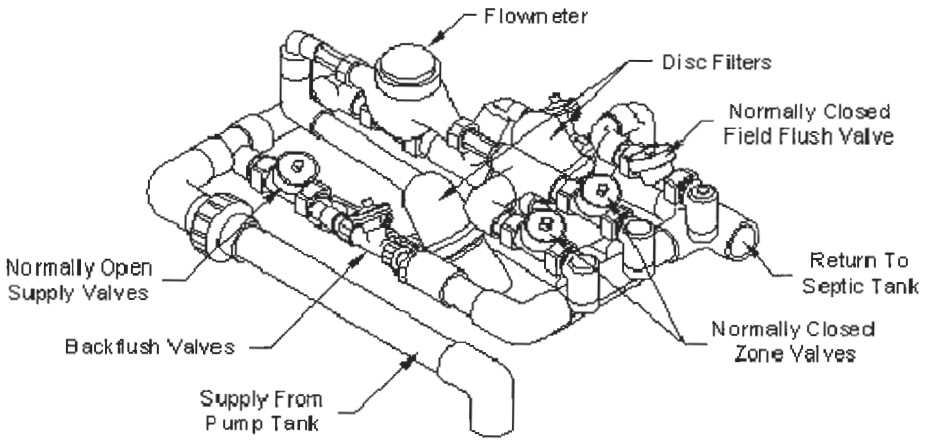
DESIGNERS GUIDE PUMP CURVE
DRIP DISPERSAL SYSTEM

Model Series	Flow Range GPM	Horsepower Range	Best Eff. GPM	Discharge Connection	Maximum Solids Size	Voltage
PUTURB15112W	6 - 28	½	18	1 ¼	1/16" dia.	115
PUTURB15122W	6 - 28	½	18	1 ¼	1/16" dia.	230

System Component #3 – Central Hydraulic Control Unit (CU)

15 Gallon per Minute Hydraulic Control Unit

American Manufacturing Company, Inc.
1-800-345-3132



HYDRAULIC CONTROL UNIT (CU)
w/INSULATED ENCLOSURE

The hydraulic unit is mounted on an aluminum skid, heated, and enclosed in an "at grade" polyethylene insulated valve box with bolt down cover. The Control valves and heater are pre-wired with a 15' cord suitable for connection to the control terminal strips. Unit is as required and specified by American Manufacturing Company, Inc. Installation notes are found on the detailed design plan prepared by Penn's Trail Environmental, LLC.

American Manufacturing Company, Inc.
P.O. Box 97, Elkwood VA 22718

1-800-345-3132

REMOTE ZONE VALVES / PUMPING DOWNHILL

Remote zone valve use pertains to when the zone activation solenoid valve is located at the dispersal zone in the field as opposed to at the hydraulic filtration unit. Remote valves require that control wire be run from the panel to the valve, preferably in conduit. There are several situations and considerations regarding the appropriate utilization of remote drip zone control valves.

In multiple zone drip dispersal systems, such as in a large flow design, remote zone valves are typically utilized as only one common supply line is required.

Remote zone valves are required whenever pumping downhill to a zone. The valve located at the field is necessary to insure that the zone supply line does not drain into the tubing network by gravity and pump shut off.

The controlling elevation is the *elevation of the supply line*. The supply line run must be below the elevation of the tubing network and those manifold portions that drain into the tubing. When the pump turns off no effluent is to drain from the line, only from the manifolds and tubing. Minimum pipe lengths down from the hydraulic unit to the supply line run (below frost), and up from the supply line to the manifolds is acceptable.

In very flat or gently sloping topography remote zone valves may be avoided by insuring the zone conveyance (supply / return) lines are installed at an adequate depth. Often whether such an installation is possible can only be ascertained at construction when actual elevations of inverts, tanks, hydraulic unit, tubing network etc. can be exactly determined.

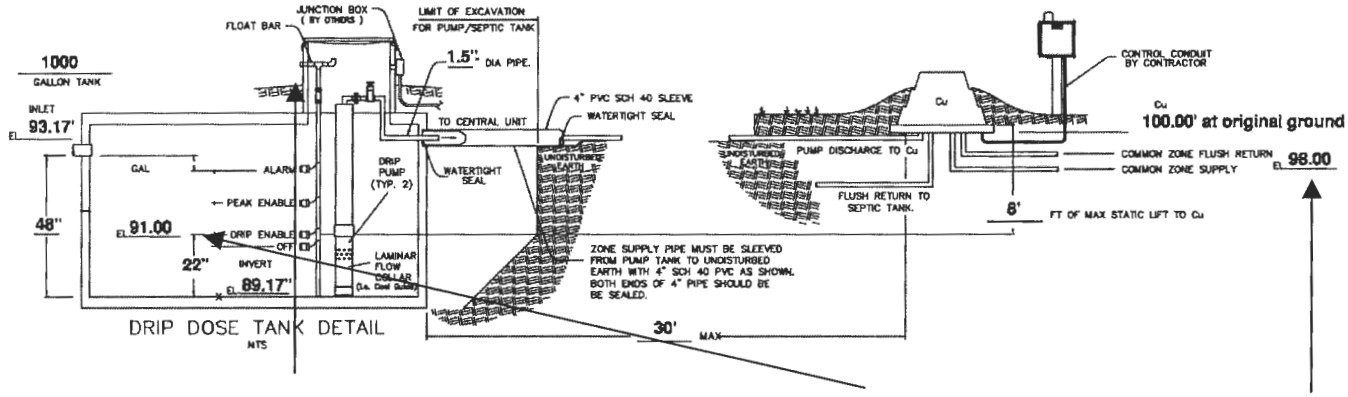
Note that the elevation of the off float is typically an increment deeper than the conveyance lines at minimum frost. A positive lift from the off float to the tubing network may still provide for a portion of the supply lines to be above the tubing elevation.

It is very important that when pressurization ends the manifold air relief valve(s) immediately allow the distribution network to vent and drain as rapidly as possible to minimize redistribution by gravity in the network.

If a portion of the zone supply line is above the elevation of the distribution network, drainage will likely be very slow as negative pressure will develop in the conveyance line. Further the line has no opportunity to vent. As it is impossible to have a truly flat network, slow drainage will be to the lowest emitters.

AMERICAN MANUFACTURING - SIDE PROFILE OF DOSE TANK AND HYDRAULIC FILTER UNIT

1-800-345-3132 * www.americanonsite.com



If site flat, (grade 100.00') pump tank cover 5-6'(!) Although pump "off" at 91.00', dispersal manifolds / tubing must be above 98.00'

ASSUMPTIONS: Hydraulic Unit bottom at grade.
"Frost" depth, ie. Supply / Return minimum depth 24"
Maximum separation from enable float to Hydraulic Unit (8') providing for maximum pump tank depth.

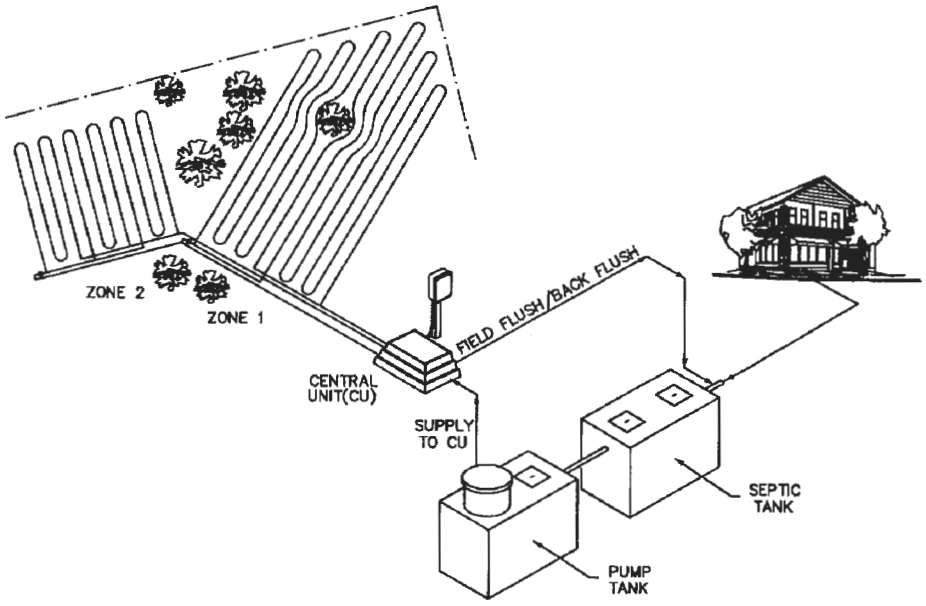
Owner's Manual

AMERICAN "PERC-RITE®"

WASTEWATER DRIP SYSTEMS

2 ZONE or 4 ZONE
SIMPLEX or DUPLEX

PATENT #'s: 5,200,065 ; 5,984,574B ; 6,261,452B1



OWNER'S NAME

HEALTH DEPT. ID NO.

LOCATION

NAME _____

STREET NAME _____

CITY, STATE ZIP _____

Table of Contents

MANUFACTURED BY:
AMERICAN MANUFACTURING COMPANY INC.
5517 WELLINGTON ROAD, GAINESVILLE, VA. 20155
1-800-345-3132

AMERICAN MANUFACTURING LIMITED WARRANTY

For one year (12 months) after the date of purchase, American Manufacturing Company, Inc. will repair or replace any product or portion thereof which proves to be defective due to materials or workmanship of American Manufacturing. We reserve the right to repair or replace defective materials at our discretion. This warranty does not cover the following conditions:

1. Defects or problems caused by improper installation or maintenance of materials.
2. Abuse, neglect or accidental damage of products.
3. Normal maintenance or upkeep of products.
4. Lighting, war, floods, or other acts beyond our control.
5. Misapplication of our products for their designed purpose, or misapplication according to local, state or national codes when in effect.
6. American Manufacturing Company or its representatives are not responsible for the labor for the replacement of defective parts.

Defective or warranted materials must be returned to us or a place designated by American Manufacturing. All returns must be accompanied by a return authorization number supplied by American Manufacturing.

American Manufacturing will in no way be responsible for any losses or damages incurred by failure of equipment, parts or service. NOTE: Some states do not allow exclusion of damages so this may not apply to you. There are no other warranties written or implied.

INTRODUCTION

Congratulations! You are now the owner of a state of the art wastewater treatment and recycling system by American Manufacturing Company, Inc. We have been in business for over 20 years and are considered one of the leaders in the On-Site Wastewater industry. With a staff having over 100 years collective experience in providing solutions to new sites and sites in need of repair, we are able to deliver an ecological, economical, easy to install and off-the-shelf ***Perc-Rite® Drip*** to owners like yourself.

When and How to use manual

This owner's manual should be read cover to cover initially, and then as needed to answer any questions or assist the owner in fulfilling their maintenance and inspection responsibilities.

When and Where to call for assistance or get additional information

If at any time you have a question about the ***Perc-Rite® Drip*** or observe any alarm or unusual condition, you should call your qualified service representative or installing contractor as soon as possible. The owner should record in the back of this manual, the contact name and telephone number of the qualified service representative and installing contractor. If further assistance is needed, call American Manufacturing Company, Inc. at 800-345-3132, or visit us *at www.americanonsite.com*.

Overview of Manual

The manual is organized to cover safety precautions and warnings, an overview of the ***Perc-Rite® Drip*** components, and the owner's responsibility. A startup log and limited warranty are in the back of this manual.

SAFETY PRECAUTIONS AND WARNINGS

The owner or operator of the ***Perc-Rite® Drip*** should take precautions consistent with operators working with sewage and/or electricity while working with, or around any of the system components.

Electrical Hazards

The ***Perc-Rite® Drip*** incorporates pump(s), float switches, relays and many electrical components that use 230 volts, 120 volts or 24 volts AC. Improper use of equipment can cause an electrical shock and may lead to serious injury or death.

Sewage Hazards

Proper attention should be given to cleanup when working in and around the septic and pump tanks and wastewater handling equipment to insure that disease causing bacteria are not transmitted to persons or contact surfaces. The septic and pump tanks can allow for a toxic buildup of poisonous gasses that can lead to serious injury or death if inhaled.

Heavy Lifting Hazards

The owner and/or operator should exercise proper caution when lifting heavy system components, such as pump tank lids. Improper lifting of heavy components can lead to loss of limb and/or mobility.

OWNER'S RESPONSIBILITY

Preventative Maintenance

The drip field area should receive only the most passive type yard uses. No use is recommended when conditions are wet. Under no conditions are any autos or heavy machinery to be allowed on the site.

In order to prevent erosion, the site should be established and maintained as a healthy lawn, or if wooded, mulched and stabilized. Erosion of the site and the adjacent areas should be controlled and eliminated. Surface waters should be diverted away from all components.

Scheduled Inspections

Within a month of operation the owner should contact the installer to have the system inspected for proper startup. After three months of operation the drip field should be walked and the system inspected. Symptoms to look for on the field walk inspection are patches of wetness. If symptoms are identified, notify your service provider immediately. The drip field should be walked & inspected at least annually.

A trained professional service provider, your American Dealer, should inspect the septic tank and pump chambers at least once a year. The septic tank should be pumped when the sludge level reaches 25% or approximately 12 inches, or when the scum layer on top is excessive. The flow meter reading in the hydraulic unit should be recorded with the date on a quarterly basis.

Alarms - Notifying Service Provider of alarm events

The system controller is equipped with an audiovisual alarm-to-alarm high water level condition. The high level alarm may be silenced by pressing the "silence" button on the side of the control. Since a high water level condition can be caused by pump failure, excessive infiltration, or an unusually large peak water use, the owner should call the service provider to determine the cause of the alarm prior to requesting service.

If at any time there are any indications of failure, such as the flow meter not moving during a dose or wetness in the area of the drip field, notify your service provider immediately.

Monitor & Regulate waste input to septic tanks

Since all processes in this sewage disposal system use biological activity to treat the wastewater, only typical biodegradable household wastes are to be disposed of in drains leading to the septic tank. Never dispose of pesticides, oil or grease based products, or non-fecal solids (especially feminine hygiene products) into the system. Minimize disposal of high strength over-the-counter type products such as bleach, and do not use colored toilet tissue.

OVERVIEW OF PERC-RITE® DRIP SYSTEM

The ***Perc-Rite® Drip System*** is a unique fluid handling system for dispersal of effluent wastewater in soil systems. The system incorporates filtration, time and level controlled application and ultra low rate drip distribution. In conditions where aerobic dispersal, such as "Low Pressure Distribution", of septic effluent is required or where land application with the use of conventional soil absorption fields are not acceptable, this system offers a unique method for subsurface distribution of the waste water effluent.

The ***Perc-Rite® Drip System*** will accommodate virtually any type of pretreatment process, whether septic tank (anaerobic), aerobic, lagoon, or any type of treatment facility. Only primary treatment (the removal of large settleable solids) of sewage is necessary for the operation of the system. Local soil and site conditions may require additional treatment for excessive organics, oil and grease or other contaminants.

Since the installation of the field distribution lines causes very little soil disturbance and effluent discharge volume from each emitter hole is insignificant, the installation of the system has very little site impact even in established lawns or park areas. After installation there are virtually no visible indications that the installation site is being used for disposal purposes. This system is especially suited for landscaped or wooded areas near buildings, trailer parks, apartment complexes or residential subdivisions.

The ***Perc-Rite® Drip System*** is operated via a "state of the art" controller, which is activated by level sensing devices (standard mechanical differential float switches) located in a dosing tank downstream from the pretreatment process or processes (typically a septic tank). When activated by the rising level of effluent in the dosing tank, the controller will enable the disposal cycle, and as dictated by the time clock, pump the effluent through a 115-micron disc filter and then to final drip dispersal.

Drip Tubing

The drip field supply line conveys the effluent to the drip absorption zone that is being dosed where it is discharged below the soil surface through a patented chemical-resisting pressure compensating self cleaning "drip" poly-tubing emitter. The emitters or "drippers" are located every two feet in the tubing and emit 0.65 gallons per hour per emitter. The dripper lines are automatically scoured (forward flushed) every 25 dosing cycles. This function is activated by the controller, which opens the field flush valve, thus allowing the flushed effluent to be returned to the pretreatment tank. The duration of this cycle is approximately three minutes. The flushing cycle produces a high

velocity cleansing/scouring action by the effluent along the inside walls of the dripper tubing and P.V.C. Manifolds. The tubing emitters are self-cleaning and require no maintenance.

The construction of the drip tubing is unique in that the internal diaphragm and labyrinth provide for an exact amount of effluent to be discharged from each of its emitters, which are spaced at two-foot intervals along the entire length of the drip tubing. Each emitter maintains a constant flow over pressure ranges of 7 to 70 psi. Because the effluent is distributed at an ultra low rate, large quantities of effluent may be economically distributed over large areas during controlled periods of time without saturating the surrounding soil.

Air Release Valves

The drip field return line conveys the effluent from the drip absorption zone (used to "flush" or clean the tubing) back to the pretreatment device. Each zone will have an air release valve housed in a small valve box at the highest point of the return manifold pipe. This valve will close when the water pressure arrives at the valve during each dose. The air release valve allows air to reenter the tubing after each dose to allow the tubing to drain. This also prevents the uphill tubing from draining water into the downhill tubing and overloading downhill tubing.

In the event of damage to the air release valve, effluent may leak from the system. This condition should be fixed immediately by replacing damaged parts. Air release valves should not be covered with soil or other material and should always be accessible to the service personnel.

Sequence of Operation: PERC-RITE® DRIP SYSTEM

The pump control panel is equipped with four float switches to control the timed doses to be discharged. The four float switches, "Redundant Off", "Standard Dose Enable", Peak Dose Enable" (optional), and "High Level" function as follows:

Redundant Off - The water level must be high enough to overcome the "Redundant Off" (first & bottom) float in order for the pump to be permitted to run.

Standard Dose Enable - When the water level rises high enough to overcome the "Standard Dose Enable" (second) float and the time clock has timed out the preset time delay of 180 minutes (rest between dosing cycles for two zone designs) the pump will activate and the lead zone is dosed. The pump will continue to run for the length of time as adjusted on the pump run timer and then shut off. The pump will remain off until the internal time clock again times out the preset time delay (180 minutes) after which the pump will activate (as long as the "Standard Dose Enable" float is still up) and will run until the pump run timer finishes timing out. This process will repeat until the water level drops below the "Standard Dose Enable" float and the pump run timer has timed out. The rest time automatically varies with the number of Zones.

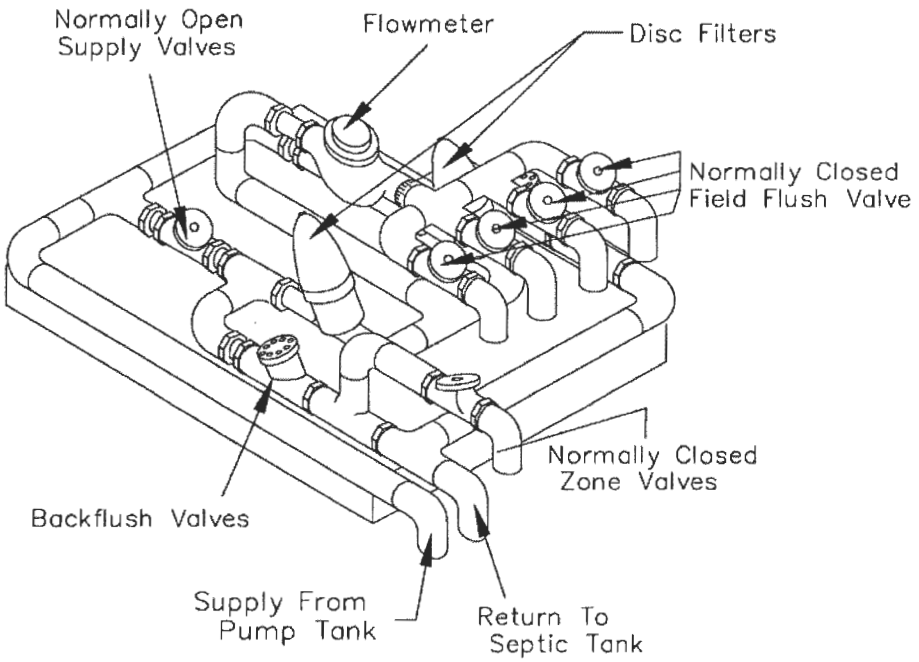
Peak Dose Enable - The control system will be equipped with a "Peak Dose Enable" circuit to manage peak flows and excess water use. If the rising water level activates the "Peak Dose Enable" (third) float, the "Pump - Off - Pump & Alarm" switch is set to "Pump", and the preset time delay has exceeded 108 minutes ("Peak Dose Enable" rest between cycles for two zone designs), the lead zone will be dosed. When the peak circuit has been deactivated the normal pumping cycle will resume. If the rising water level activates the "Peak Dose Enable" (third) float, the "Pump - Off - Pump & Alarm" switch is set to "Pump & Alarm", and the preset time delay has exceeded 108 minutes ("Peak Dose Enable" rest between cycles for two zone designs), the lead zone will be dosed and the "Peak Dose Enable" alarm will be activated. The audio portion of the alarm may be silenced by pressing the Test-Normal-Silence switch to the silence position. When the "Peak Dose Enable" float has returned to the down position the alarm will be deactivated and the normal pumping cycle will resume. The rest time automatically varies with the number of Zones.

High Level - If the water level rises enough to overcome the "High Level" (fourth) float, the audiovisual alarm will activate. The audio portion of the alarm may be silenced by pressing the Test-Normal-Silence switch (located on the outside of the control panel) to the silence position. The alarm circuit will auto reset when the "High Level" float returns to its normal (down) position. The high-level alarm float is a wide-angle float in order to latch the alarm signal.

CONTROLLER

The "state of the art" controller is enclosed in an outdoor electrical control box located near and connected to the hydraulic unit. The control panel uses 115 or 230 volt power and the microprocessor has 120V and 24V AC inputs and relay outputs for automatic operation of the ***Perc-Rite® Drip System***. When in the "Hand" or "Off" position, the manual switches (Hand-Off-Auto) on the door of the control panel completely bypass the microprocessor. The "Hand" position will allow manual operation of the component in the event of a microprocessor failure.

NOTE:
THE HOMEOWNER ASSUMES FULL RESPONSIBILITY FOR CONDITIONS OR MALFUNCTIONS DUE TO CHANGES IN PUMP RUN TIME BY ANYONE OTHER THAN A QUALIFIED SERVICE REPRESENTATIVE. LEAVING THE PUMP CONTROL IN THE "HAND" POSITION WILL FORCE THE PUMP TO RUN CONTINUOUSLY AND MAY RESULT IN PUMP FAILURE.



Hydraulic Unit

The submersible pump delivers unfiltered effluent through each filter. The filter backflushing schedule is triggered at the beginning of each dose cycle. The backflushing sequence is as follows. One filter valve closes, thus blocking the flow of unfiltered effluent to that filter. After a short delay, the other flushing valve opens, thereby backflushing the unused filter. The accumulated impurities discharge back into the pretreatment unit. The closing and opening procedure of the filter and back flush valves causes a change of flow within the unit to provide effluent from one filter to backflush the other filter. The backflush procedure lasts approximately fifteen seconds then the back flushing valve closes. Only after the first filter has completed its backflushing cycle, will the second filter begin its cycle of backflushing in the same manner as the first. Effluent will then be pumped through clean disc filters, then through the **flow meter** and finally through the zone valves to the drip field supply line. During extended dose times the disc filters are re-backwashed to assure optimum operation.

System Parameters Simplex System w/ 1 or 2 Zones & 2 Disc Filters

a. System Fail indicated by high level alarm or unusual wetness in the field.
b. Standard Rest time between doses = 180 minutes, 4 doses per day per zone.
c. Peak Rest time between doses = 108 minutes, 6.6 doses per day per zone.
d. Flow meter on hydraulic unit (record periodically to monitor activity).
e. To remove pump or zone from service place its' control switch to "off".

System Parameters Simplex & Duplex System w/ 4 Zones & 2 Disc Filters

a. System Fail indicated by high level alarm or unusual wetness in the field.
b. Standard Rest time, 4 doses per day per zone;
   - 4 zones in use doses = 90 minutes,
   - 3 zones in use doses = 120 minutes,
   - 2 zones in use doses = 180 minutes,
c. Peak Rest time between doses
   - 4 zones in use doses = 54 minutes,
   - 3 zones in use doses = 72 minutes,
   - 2 zones in use doses = 108 minutes,
d. Flow meter on hydraulic unit (record periodically to monitor activity).
e. To remove pump or zone from service place its' control switch to "off".

AMERICAN "PERC-RITE®"

WASTEWATER DRIP SYSTEMS

2 ZONE or 4 ZONE
SIMPLEX or DUPLEX
CONTROLLER

SIEMENS MICROPROCESSOR - INPUTS AND OUTPUTS

The Siemens microprocessor has inputs on the bottom and outputs on top. The two zone units have 8 inputs (0-7) and 6 outputs (0-5). The three and four zone has the following;

Output	Q0	.0	.1	.2	.3	.4	.5	.6	.7	Q1	.0	.1				
Input	I0	.0	.1	.2	.3	.4	.5	.6	.7	I1	.0	.1	.2	.3	.4	.5

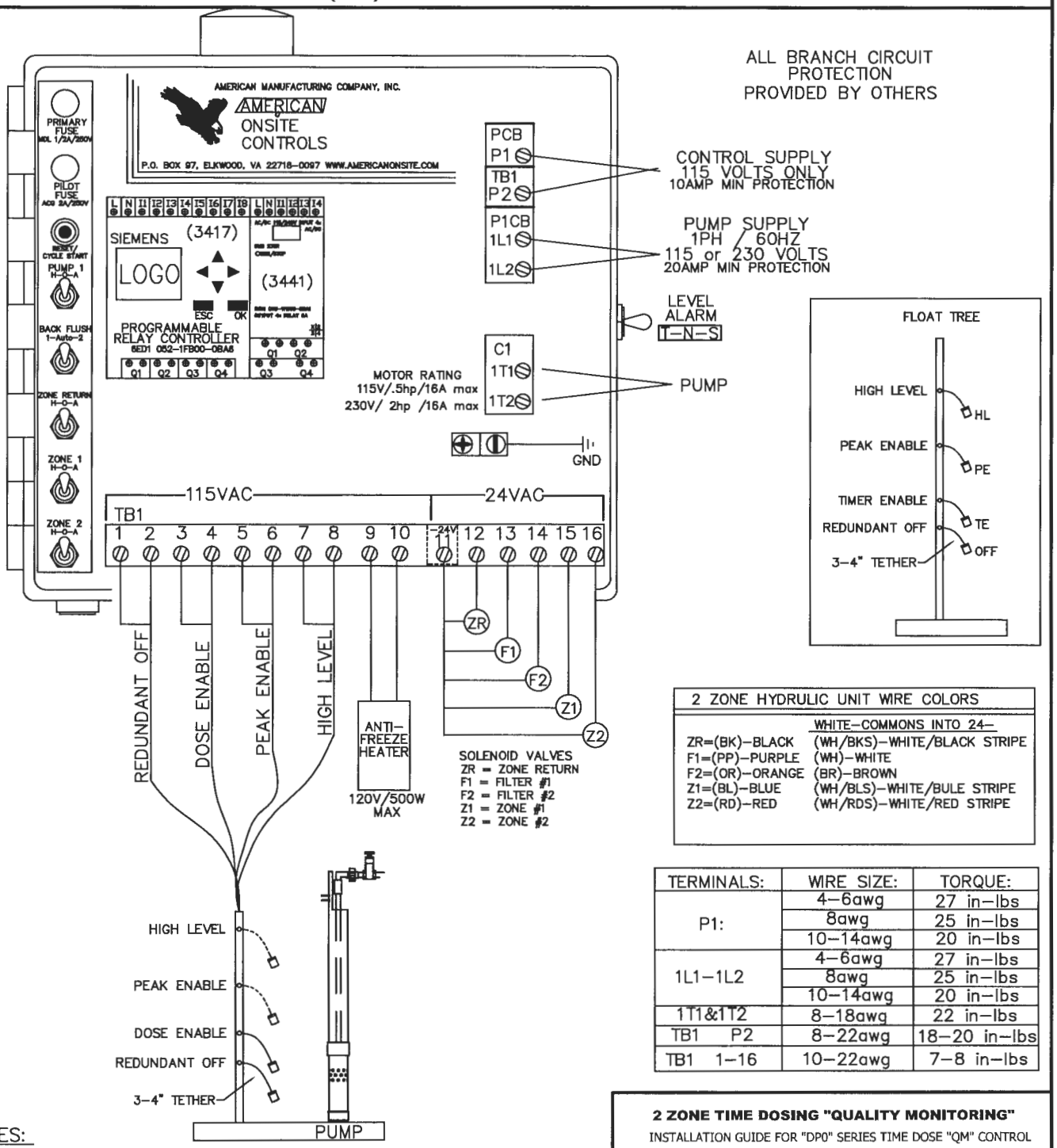
MICROPROCESSOR - INPUTS AND OUTPUTS

REF **A**	REF **B**	REF **C**		REF **A**	REF **B**	REF **C**	
Input I0	Input I0	Input I0	Description	Output Q0	Output Q0	Output Q0	Description
.0	.0	.0	DOSE CUTOUT	.0	.0	.0	PUMP 1
.1	.1	.1	OFF LEVEL FLOAT	.1	.1	.1	ZONE RETURN
.2	.2	.2	DOSE ENABLE FLOAT	.2	.2	.2	FILTER 1
.3	.3	.3	PEAK ENABLE FLOAT	.3	.3	.3	FILTER 2
.4	.4	.4	RESET/CYCLE START	.4	.4	.4	FIELD 1
.5	.5	.5	PUMP 1	.5	.5	.5	FIELD 2
.6	.6	.6	ZONE 1 VALVE		.6	.6	FIELD 3
.7	.7	.7	ZONE 2 VALVE		.7	.7	FIELD 4
	.0	.0	ZONE 3 VALVE		.0	.0	PUMP 2
Input I1	Input I1	Input I1		Output Q1	Output Q1	Output Q1	
	.1	.1	ZONE 4 VALVE		.1	.1	ZONE MASTER
	.2	.2	PUMP 2				
	.3	.3	CURRENT SENSOR				
	.4	.4	HIGH LEVEL (OPTION)				
	.5	.5	AUX. INPUT 1				

References: "REF A " is Two Zone Simplex System
"REF B " is Four Zone Simplex System
"REF C " is Four Zone Duplex System

AMERICAN ONSITE CONTROLS

AMERICAN MANUFACTURING COMPANY INC.
P.O. BOX 97 ELKWOOD, VA 22718
(800) 345-3132 www.americanonsite.com



ALL BRANCH CIRCUIT PROTECTION PROVIDED BY OTHERS

2 ZONE HYDRULIC UNIT WIRE COLORS	
	WHITE-COMMONS INTO 24-
ZR=(BK)-BLACK	(WH/BKS)-WHITE/BLACK STRIPE
F1=(PP)-PURPLE	(WH)-WHITE
F2=(OR)-ORANGE	(BR)-BROWN
Z1=(BL)-BLUE	(WH/BLS)-WHITE/BULE STRIPE
Z2=(RD)-RED	(WH/RDS)-WHITE/RED STRIPE

TERMINALS:	WIRE SIZE:	TORQUE:
P1:	4-6awg	27 in-lbs
	8awg	25 in-lbs
	10-14awg	20 in-lbs
1L1-1L2	4-6awg	27 in-lbs
	8awg	25 in-lbs
	10-14awg	20 in-lbs
1T1&1T2	8-18awg	22 in-lbs
TB1 P2	8-22awg	18-20 in-lbs
TB1 1-16	10-22awg	7-8 in-lbs

NOTES:

1. PLEASE REVIEW ALL PAGES AND INSERTS IN THIS MANUAL BEFORE ATTEMPTING TO INSTALL ANY CONTROL EQUIPMENT.
2. DASHED LINES REPRESENT OPTIONAL EQUIPMENT
3. TIME DOSING IS CONTROLLED BY A SIEMENS LOGO! SEE ADDITIONAL MANUAL FOR PROGRAMMING INSTRUCTIONS.
4. BF=BACKFLUSH, AND ZR=ZONE RETURN

c UL us

2 ZONE TIME DOSING "QUALITY MONITORING"

INSTALLATION GUIDE FOR "DP0" SERIES TIME DOSE "QM" CONTROL
NEMA 4X, 1 PHASE, OPTIONS: A,J,L

MODEL#: DP022-SAB124-AJL		
DWG#: X9114-2Z		REVISION A
DATE: 04/05/12	DRAWN BY: SPC	APPROVED
FILE PATH: S:/DATA/CONTROLS/AUTOCAD2000LT/X&LIGHTNING/X9114-2ZN.dwg		PAGE 1

STARTUP LOG

LINE NO.	DESIGN VALUE	AS-BUILT VALUE	DESCRIPTION NUMBER OF ZONES	1	USER LOG	
1	4		BEDROOMS		DATE	FLOW METER
2	600		GALLONS PER DAY			
3	SiL		TEXTURE GROUP			
4	0.34		GPD/FT2 DESIGN SOIL LOADING RATE			
5	1200		TOTAL LINEAR FEET TUBING			
6	4.60		GPD/LF FT DESIGN TUBING LOADING RATE			
7			METER READING			
8	1200.00		ZONE 1 LINEAR FEET OF TUBING			
9	4		ZONE 1 NUMBER OF FIELD FLUSH CONNECTIONS			
10	6.10		ZONE 1 GPM DOSING FLOW RATE			
11	6.4		ZONE 1 GPM TOTAL FLUSHING FLOW RATE			
12	9.84		ZONE 1 RUN TIME			
13			ZONE 2 LINEAR FEET OF TUBING			
14			ZONE 2 NUMBER OF FIELD FLUSH CONNECTIONS			
15			ZONE 2 GPM DOSING FLOW RATE			
16			ZONE 2 GPM TOTAL FLUSHING FLOW RATE			
17			ZONE 2 RUN TIME			
18			ZONE 3 LINEAR FEET OF TUBING			
19			ZONE 3 NUMBER OF FIELD FLUSH CONNECTIONS			
20			ZONE 3 GPM DOSING FLOW RATE			
21			ZONE 3 GPM TOTAL FLUSHING FLOW			
22			ZONE 3 RUN TIME			
23			ZONE 4 LINEAR FEET OF TUBING			
24			ZONE 4 NUMBER OF FIELD FLUSH CONNECTIONS			
25			ZONE 4 GPM DOSING FLOW RATE			
26			ZONE 4 GPM TOTAL FLUSHING FLOW			
27			ZONE 4 RUN TIME			
28			PEAK ENABLE CYCLE COUNTER			
29			HIGH LEVEL CYCLE COUNTER			
30	CONTRACTOR STARTUP REPRESENTATIVE:					
31	STARTUP DATE:					

DESIGNER: PENNS TRAIL ENVIRONMENTAL, LLC
PH. 301-829-5022 FAX 215-362-4620 EMAIL STAFF@PENNSTRAIL.COM
FAX ONE COPY OF THIS REPORT FOLLOWING STARTUP TO THE NUMBER ABOVE.

American Manufacturing Company, Inc.

P.O. Box 97 Elkwood, Virginia 22718 (800)345-3132

June 10, 2019

Adam Browning
Penn's Trail Environmental, LLC
21 E. Lincoln Ave.-Suite 160
Hatfield, PA 19440

Re:

2020 Millers Mill Road Tract
4th Election District
Howard County, Maryland
Perc-Rite® Drip System Design Review

Mr. Browning,

Upon our review of the above design prepared by you for an ***American Manufacturing Co. Perc-Rite® Drip Dispersal System, dated 05/24/2019*** for the above property, I hereby certify that the system has been designed in compliance with the manufacturer's recommendations.

Based on the materials reviewed, the design is an appropriate application of the ***Perc-Rite®*** criteria.

American Manufacturing only certifies this Perc-Rite® drip system's ability to operate as engineered based upon the provided design submittal. American Manufacturing Co. makes no certification to the design's applicability to local approvals, codes, regulations, pretreatment requirements, or soil suitability for a subsurface dispersal system. This design review and certification applies *only* to the specified Perc-Rite® drip Micro-Mound system design. A currently permitted Alternative System design may not be exchanged for another Alternative System with out full disclosure; including permit holder agreement, written concurrence of the site evaluator, a new design reflecting the proposed Alternative System, Health Department/SEO review, and permit amendment / re-issuance. As appropriate, further State/DEP review may be necessary.

If you require have any questions or require any further information, please feel free to get in touch.

Sincerely,

Jesse N. Cordy

Jesse N. Cordy
American Manufacturing Company, Inc.

www.americanonsite.com

Manufacturer Owner's Manual

Design Adequacy Review Letter

American Manufacturing Company, Inc.
P.O. Box 97, Elkwood VA 22718

1-800-345-3132

There are other hydraulic design considerations when pumping downhill or to networks with very little rise / run from the hydraulic unit to the distribution network.

It is important that the pressure at the first emitter of the lowest lateral of the lowest network is not over pressurized during dosing. The TDH needs to be calculated and the residual head identified during the dosing conditions. Be sure to account the negative static head. Although the emitter functions to 70 psi, use of a pressure regulator is indicated if the calculated residual pressure is 55 – 60 psi. The typical pressure regulator specified provides 60 psi.

The TDH during flushing needs to be verified in consideration of the pressure regulator. When pumping downhill with a negative static head of several feet, there may not be enough head to return the filed flush residuals as a positive static head to the sewer line. The placement of the pressure regulator after, down stream, of the remote zone valve maybe necessary in these cases.

These conditions needed to be carefully calculated to prevent over pressurization of emitters during dosing and to provide adequate velocity during field flushing.

Always place an additional air relief valve on the common field flush return line at the hydraulic unit when pumping downhill.

AMERICAN MANUFACTURING COMPANY, INC.

P.O. BOX 549, MANASSAS, VA 20108-0549 1-800-345-3132

LETTER OF AGREEMENT FOR MONITORING - RETAIN FOR RECORDS

The System controller monitors the liquid level in the pump tank. In the event of a high level alarm or peak dose enable condition, an alarm will sound.

The owner understands that as a condition of the warranty, the Manufacturer will monitor the system during the warranty period (standard one year) for flow, peak dose enable conditions, high level alarm conditions, and other mechanical functions which result in a high level alarm.

The Owner shall provide American or its dealer/representative with such access to the property and system as is reasonably necessary for American to comply with the terms of this Agreement. As soon as an alarm condition occurs, the owner shall notify the installer which condition occurred, the nature of the condition, and where the system is located. The owner understands and will hold the installer and manufacturer harmless for alarm conditions and other events beyond their control. Please reference the American Manufacturing Company, Inc. warranty policy. American Manufacturing Company, Inc. shall not be responsible for damages caused by any type of system failure or for soil suitability, damage due to construction, use, acts of God, or other events.

Note: In the event of a power, pump, or other mechanical failure, the system should be designed to provide at least an additional 1/4 day of storage capacity.

DEALER _____ OWNER: _____

ADDRESS _____ ADDRESS: _____

_____ _____

Representative By: _____

Date: _____ Date: _____

Serial No: _____

LETTER OF AGREEMENT FOR MONITORING - RETURN FOR WARRANTY

The System controller monitors the liquid level in the pump tank. In the event of a high level alarm or peak dose enable condition, an alarm will Sound.

The owner understands that as a condition of the warranty, the Manufacturer will monitor the system during the warranty period (standard two year) for flow, peak dose enable conditions, high level alarm conditions, and other mechanical functions which result in a high level alarm.

The Owner shall provide American or its representative with such access to the property and system as is reasonably necessary for American to comply with the terms of this Agreement. As soon as an alarm condition occurs, the owner shall notify the installer which condition occurred, the nature of the condition, and where the system is located. The owner understands and will hold the installer and manufacturer harmless for alarm conditions and other events beyond their control. Please reference the American Manufacturing Company, Inc. warranty policy. American Manufacturing Company, Inc. shall not be responsible for damages caused by any type of system failure or for soil suitability, damage due to construction, use, acts of God, or other events.

Note: In the event of a power, pump, or other mechanical failure, the system should be designed to provide at least an additional 1/4 day of storage capacity.

DEALER _____ OWNER: _____

ADDRESS _____ ADDRESS: _____

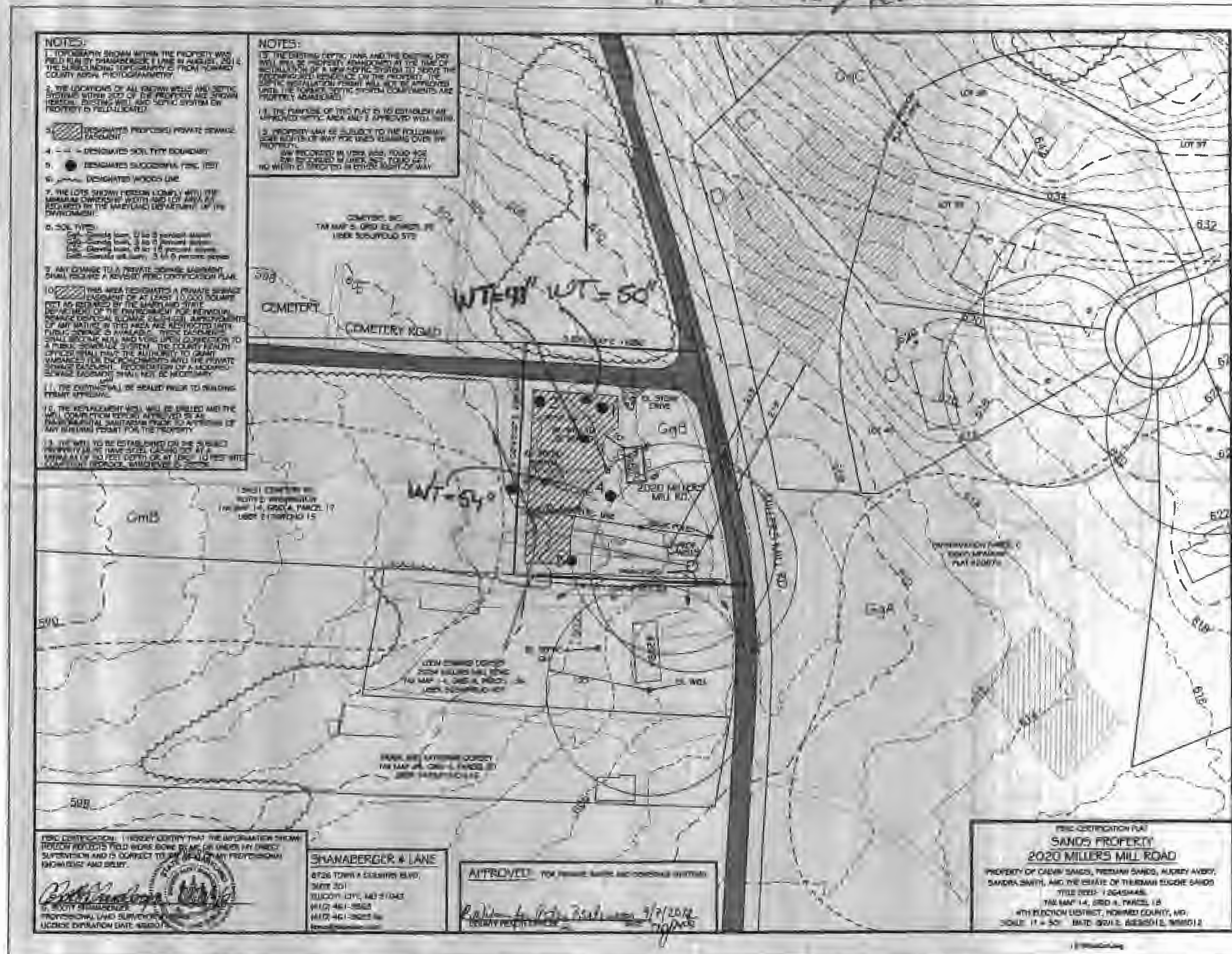
_____ _____

Representative By: _____

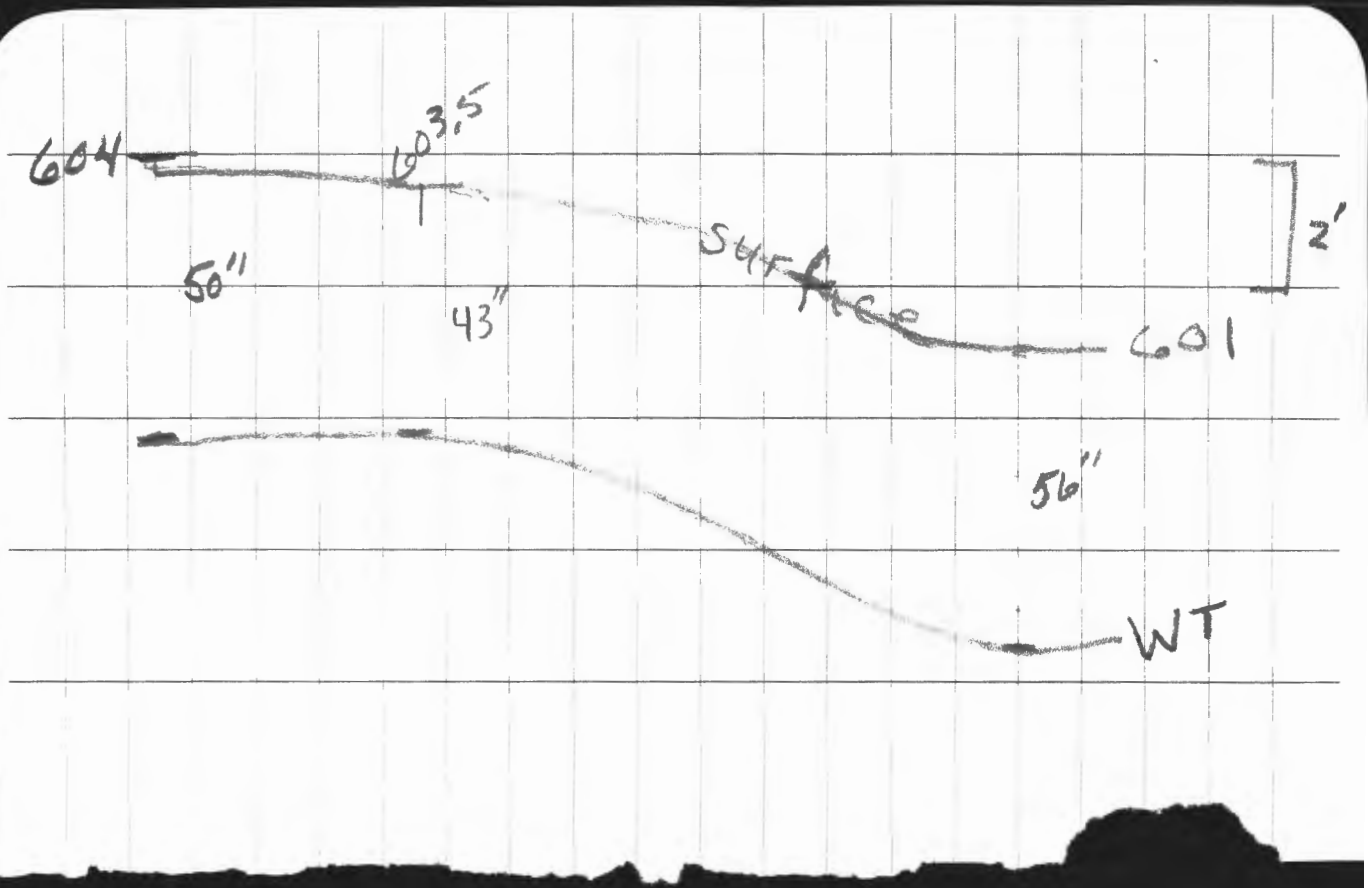
Date: _____ Date: _____

Serial No: _____

1/18/19 RB / KW



PC 557371


604
603.5
50"
43"
Surface
601
2'
56"
WT

2020 Miller's Mill Rd
Cooksville, MD 21723

Clerk of the Circuit Court for
Howard County
Land Records/Licensing

6095 Marshalee Drive
Suite 120
Elkridge, MD 21075
410-313-5850

LR - Agreement Recording Fee
1x 20.00 20.00

Name: Abrecht
Ref: 69

LR - Agreement Surcharge
1x 40.00 40.00

SubTotal: 60.00
Total: 60.00

CRD-Credit 60.00
Credit Card Confirmation : 08911D

07/31/2019 12:17 CC17-DH
#12499900/396/109
~ Thank you for visiting us today~

AGREEMENT AND EASEMENT FOR INSTALLATION OF AN INNOVATIVE ON-SITE SEWAGE DISPOSAL SYSTEM

THIS AGREEMENT is made this 31st day of July 2019, among Christopher and Kelly Abreutt, hereinafter referred to as "Owner", the Howard County Health Department hereinafter collectively referred to as the "County", and the Department of the Environment, hereinafter referred to as the "Department".

WHEREAS, Owner owns a tract of land located on 2020 Millers Mill Rd in the 4th Election District of Howard County, Maryland, and the deed to same is recorded among the Land Records of Howard County, Maryland, in Liber 17988 and Folio 00327.

WHEREAS, Owner's land is unsuitable for the installation of a conventional on-site sewage disposal system and owner has requested the Department's approval to install an innovative system of sewage disposal.

NOW, THEREFORE, the parties hereto agree as follows:

A. The property is currently improved with a 4 bedroom single family residence served by a private well and an on-site sewage disposal system.

B. The Owners agree that the County will approve no future additions, expansions of use for, or changes of use for any building on the property that may involve increased flow to the on-site sewage disposal system.

C. Owner must install and maintain a water meter on the incoming side of the water system or an event counter and an elapsed time meter on the sewage pumping system.

D. Owner hereby grants to the Department and the County the right to enter upon the property at any reasonable time for access to the system to make periodic inspections and the Owner agrees to provide any information and data requested and needed by the Department to develop accurate and thorough test results.

E. Owner acknowledges and agrees that the proposed innovative system is experimental and that his or her participation is voluntary. Owner agrees that there shall be no liability on the part of the County or Department to Owner if this innovative system fails, and that the County and the Department do not warrant or guarantee that the system will adequately or properly function.

F. Owner acknowledges and agrees that neither the County nor the Department nor any of its agents or employees, either officially or individually, underwrites the operation of any system approved by them.

G. The Owner will devote such care and effort to the maintenance of the system so that a system malfunction is not the result of poor maintenance, faulty operation, or neglect.

H. The Owner agrees, that, should the system be determined by the County or the Department to pose a threat to the public health, safety or comfort, the County or the Department may order any necessary changes or corrections and the Owner agrees to pay for all such changes or corrections. System modifications may include requirements for holding of sewage waste in tanks and regular pumping from the holding tanks. Upon the County or Department's request, the Owner agrees to enter into a contract acceptable to the County or Department to allow a private entity to pump on a regularly scheduled basis an approved holding tank system.

I. The Owner agrees to contact both the Water and Science Administration, On-site systems division of the Wastewater Permits Program and the County at least forty-eight (48) hours prior to system installation, so that the Department may lay out the system in the field with the contractor. The Owner must install this system according to the plans and specifications approved by the County and Department and any changes required by the County and Department as a result of the field layout. If installation deviates substantially from the approved plans or changes such that experimental data will be compromised or reduced, the Owner agrees to pay for all necessary corrections.

J. This agreement shall run with the land and binds the Owner, his heirs, successors, and assigns. Owner further agrees that he shall inform in writing any purchaser or lessee of the property that the

system requires maintenance and other attention. The Owner agrees to record this agreement in the land records of Howard County.

K. This agreement shall not be construed to limit any authority of the County or the Department to protect the public health, safety or comfort or to issue any other orders to take any other action which is now or may hereafter be within its authority.

L. This agreement may be voided at the discretion of the Department if the system construction is not completed within six (6) months of the effective date of this agreement.

M. This agreement contains the entire agreement and understanding between the County and the Owner and the Department. There are no additional terms other than as contained in this agreement. This agreement may not be modified except in writing signed by each of the parties or by their authorized representatives.

N. The laws of the State of Maryland govern the provisions of all transactions pursuant to this agreement.

IN WITNESS WHEREOF, the parties have signed and sealed this agreement on the date indicated above.

DATE: 7/31/19

Owner

DATE: 7/31/19

Owner

DATE: 7/25/2019

Naomi Howell
Naomi Howell, Division Chief
On-Site Systems Division
Wastewater Permits Program
Water and Science Administration
Department of the Environment

DATE: 7/31/2019

Bert Nixon, Director
Environmental Health
Howard County Health Department

FILE INQUIRY NOTES

DATE	RESULTS OF REVIEW FOR FILE
5/2/19	Site visit w/ Steve K. (MDE Regional Consultant) Went over site evaluation extensively. Owners present. Area in back of property aprx. 80' x 22' or so available for shallow system. Possible LPD system if shallow percs allow it. Owners also mentioned that they are planning on selling house. Gave list of designers to owner. (KM)
6/18/19	Met w/ Steve + Jeff in office went over perc results and plan design. Slight modifications to drip field placement to be made but system design OK preliminary. (KM)

Wolf, Kevin

From: Wolf, Kevin
Sent: Tuesday, October 02, 2018 6:01 PM
To: MATT GECKLE; Steven Krieg -MDE-
Subject: Re: 2020 MILLERS MILL RD.

Matt that is a fact no doubt. This is why Steve and I know when a wet season is upon us... all the teatering systems show there ugly face! I trust Roberts perc notes, he is a cpss and was a good design from the beginning. We'll keep an eye out.

-------- Original message --------
From: MATT GECKLE <124hratm@comcast.net>
Date: 10/2/18 5:07 PM (GMT-05:00)
To: "Wolf, Kevin" <KWolf@howardcountymd.gov>, Steven Krieg -MDE- <steven.krieg@maryland.gov>
Subject: RE: 2020 MILLERS MILL RD.

Kevin,

The reason the trenches flooded out is we had a greater then normal rainfall this year and the ground could not take the rain we got last Thu. night.

This system went in May 2013 and this is the 1st time it has had a high water condition.

It will be alright once it stops raining every other day.

I emailed you, so you would know what is happening in case it develops into a problem that will not go away.

Speaking of rain if this keeps up you won't be having any sites pass the wet weather perc.

MATT GECKLE
BACK RIVER PRE-CAST,LLC

COURAGE IS BEING SCARED TO DEATH-
BUT SADDLING UP ANYWAY

On October 2, 2018 at 4:40 PM "Wolf, Kevin" <KWolf@howardcountymd.gov> wrote:

Don't see any real issues here. Robert perc'd it in July 2013 I believe. He had water on the lower part of the SDA (opposite of where trenches are installed now) of 2 holes at 11.5ft and 12ft. We signed a perc cert in 2013. Nothing stands out. Could be perched water tables but Roberts notes don't indicate that. I can ask him.

From: Steven Krieg -MDE- [mailto:steven.krieg@maryland.gov]
Sent: Monday, October 01, 2018 12:27 PM
To: Matt Geckle
Cc: Wolf, Kevin
Subject: Re: 2020 MILLERS MILL RD.

Yes I was asking Kevin.

Are the trenches intersecting perched groundwater?

On Mon, Oct 1, 2018, 12:21 PM MATT GECKLE <124hratm@comcast.net> wrote:

> I do not know ask Kevin.
>
> I put a 6 ft. long pipe in the pipe and never hit bottom.
>
> MATT GECKLE
> BACK RIVER PRE-CAST,LLC
>
> COURAGE IS BEING SCARED TO DEATH-
> BUT SADDLING UP ANYWAY
>
> > On October 1, 2018 at 10:56 AM Steven Krieg -MDE-
> > <steven.krieg@maryland.gov> wrote:
> >
> > Observation pipes full of groundwater? How deep are the
> > trenches?
> >
> > On Sat, Sep 29, 2018, 11:23 AM MATT GECKLE <
> > 124hratm@comcast.net> wrote:

Kevin,

I went 2020 Millers Mill Rd., Cooksville 21723 on Sat 9-29 for a Norweco alarm call.

The alarm was caused by a high water condition in the Norweco. When I arrived the water level was only slightly above normal, but I could tell the tank had been flooded out. The cause was do to the amount of rainfall we have received this year has flooded out the drainfield. I checked the observation pipes and they were both full of water. I told the H/O's since we have been servicing this system for 5 years and never had a high water problem that once it dries up a little their problem should go away. But in the mean time I suggested that have the whole tank pumped, only use water for quick showers, flushing the toilet, and to do their laundry off site for at least 2 weeks. I also told them they could check the water level in the observation pipes to tell when they could resume their normal water use.

I figured you would like this info. in case your dept. got involved in designing a new dispersal system.

Thanks,

MATT GECKLE
BACK RIVER PRE-CAST,LLC

COURAGE IS BEING SCARED TO DEATH-
BUT SADDLING UP ANYWAY

Click here to complete a three question customer experience survey.


610
610
610
MILLERS MILL RD
MILLERS MILL RD
MILLERS MILL RD
CEMETERY RD
CEMETERY RD
CEMETERY RD
600
600
600
2020
2024