ST. MARY'S COUNTY HEALTH DEPARTMENT
Meenakshi G. Brewster, MD, MPH - Health Officer

Administration, Records & Health Services: 301 – 475 – 4330
Environmental Health: 301 – 475 – 4321
Medical Assistance Transportation: 301 – 475 – 4296
Maryland Relay Service: 1 – 800 – 735 – 2258
Email: smchd.env@maryland.gov

ST. MARY'S COUNTY HEALTH DEPARTMENT
DIGITAL REFERRAL PLATFORM
INVITATION FOR BIDS (IFB)
FISCAL YEAR 2025
SMCHD IFB

OVERVIEW

The St. Mary's County Health Department (SMCHD) is issuing this IFB to collect bids associated with the installation of the Best Available Technology for Nitrogen Reduction (BAT) for the property located at 25466 Maddox Road. The grant award will be funded through the Bay Restoration Fund grant program (BRF), administered by the SMCHD, Environmental Health Division.

PROGRAM BACKGROUND

SMCHD Environmental Health Division administers the BRF grant program for St. Mary's County. Due to the associated cost of the proposed BAT for this project, the proposal must conform with the local procurement process.

SCOPE OF WORK

Installation of a BAT system that meets minimum requirements in COMAR 26.04.02 and is based on the design flow and waste strength.

ELIGIBILITY REQUIREMENTS

To apply for this IFB, the person must be:

- Registered with the State to Perform Onsite Wastewater Disposal Services
- Licensed in St. Mary's County as an Onsite Sewage Disposal System contractor
- State Certified through the Maryland Department of the Environment (MDE) to install BAT systems
- Certified by the manufacturer of the BAT for which they are submitting a bid

SPECIFICATIONS FOR BAT (2 OPTIONS)

1. Utilize the existing engineered plan for BAT

- 2000g pre-treatment chamber
- 2-Singulair Extended Aeration Treatment units
- 4-Bio-film Reactor units

2. Propose an alternative Technology that meets the following criteria (this may require a revised engineered plan to be submitted for review):

- Must be an MDE-approved technology for Nitrogen Reduction: https://mde.maryland.gov/programs/water/BayRestorationFund/OnsiteDisposalSystems/Documents/BAT_CLASS_I.pdf
- Reduces Nitrogen by at least 50% based on:
    - Strength of waste (see attached sample results)

    - Design Flow=2,459 GPD
- Reduces BODs and TSS to at least 300mg/l
- Must provide a letter from the BAT manufacturer stating that the proposed system can meet the above criteria.

BID REQUIREMENTS

- All components included in the specifications must be listed individually in a line item format with the cost for that item listed separately.
- A separate line item must also be included for the following:
    - Labor charges associated with the installation of the BAT system.
    - Electrical connection (cannot include cost for upgrading electrical panel)
    - 1 year Operation and Maintenance for the BAT (2nd year of O&M will be paid upon completion of 1st year's O&M)
    - Abandonment of existing onsite sewage disposal system (pump out tanks, crush in place or remove)
- Must include your company information, mailing address, and phone number
- Must be signed by the St. Mary's County Licensed Septic Contractor

SEALED BID SUBMISSION

A sealed bid must be submitted before the close of business, **August 19, 2024** to:

Candace Snavely
Accountant, Fiscal Services
St. Mary's County Health Department
P.O. Box 316, Leonardtown, Maryland 20650

The grant will be announced by **August 23, 2024**. The grant applicant and BAT manufacturer will be notified in writing of the grant amount.

For more information, contact:

Heather Moritz, Director Environmental Health Division
St. Mary's County Health Department
21580 Peabody Street, PO Box 316
Leonardtown, Maryland 20650
heather.moritz@maryland.gov
301-475-4321

Wastewater Strength Sample Results

All values in mg per liter

date	BOD(5)	O&G	TKN	total N	TSS	DO
02/29/22	1,575.0	188	102.2	102.3	460	
03/08/22	1,235.5	484	121.8	121.8	511	ND*
03/10/22	1,731.0	2003	119.2	119.2	980	ND*
03/29/22	1,728.0	848	96.0	96.0	640	ND*
mean	1,567	880	109.8	109.8	648.8	

Design On-Site Sewage Disposal System

Design for:

Chaptico Market
Ronnie & Gwen Properties, LLC
c/o Jody & Lucas Black
25466 Maddox Road
PO Box 175
Clements, Maryland 20624

Property Description

25466 Maddox Road, Chaptico, Maryland 20659
Tax Map 0017 Block 0021, Parcel 0091
Zoning : VMX/CA-LDA
Fourth Election District, St. Mary's Co., Maryland
Department of Land Use and Growth Management
Health Department Tax ID 04-017757
LSR Job 0129-21

Design O/C ZC 11/28/2023

Design Criteria:

Grocery Store - Market

2,009 gpd Design Flow Rate (Chaptico Market - parcel 14)
450 gpd Design flow rate [3 bdrm residential (25450 Hurry Road) dwelling]
==========
2,459 gpd to Design flow

November 14, 2023

STATE OF MARYLAND
William L. Mehaffey
No. 17825
REGISTERED
PROFESSIONAL ENGINEER

William L Mehaffey

Engineer/Surveyor

Little Silences Rest, Inc
41650 Court House Drive - Suite 101
Leonardtown, Maryland 20650
O 301.475.2366 #7 C 301.481.3258

Owner

Ronnie and Gwen Properties, LLC
c/o Jodi & Lucas Black
PO Box 175
Clements, Maryland 20624

On-Site Sewage Disposal System Design

1.0	2,459	gpd - design flow (per HD meter analysis see tabulation page 1)
1.1	1,500	gpd average daily flow rate (per HD commets 11/1/2023
2.0	0.2	gpd/sf basal loading rate (per BES Report 07/23/2022)
2.1	12,295	sf basal area required for sand mound
3.0	0.200	gpd /sf loading rate for drip dispersal (BES Report 07/23/2022 pg 6)
3.1	12,295	sf basal area required for drip dispersal
3.2	15,376	sf basal area provided for drip dispersal
3.3	0.160	gpd/sf loading rate based on drip area provided

Operational (Transfer) Pump Chamber

1 Operational Pump Chamber Design (transfer pump)

Use	**1,000**	gallon pump chamber		
length	99.00	inches	or	7'-4"
width	57.00	inches	or	5'-0"
dist invert to inlet	47.00	inches	or	3.92 ft
area	5,643	sq inch	or	39.19 sq ft
CF/ ft rise =	39.19	CF/V ft	or	293 gal/vf

2 Vertical Distance for a dose =

1 dose = Q (ADF) / 10 doses/day =	150	gallons	
1 dose (cu ft) =	20.05	cu ft	
vert dist =	0.51	ft	6.14 inches

3 Float elevations:

elev invert in =	**7.19**	
range from inv in & high level alarm =	1.40	
elev high level alarm =	5.79	
6 " space	0.50	ft
elev pump start =	5.29	
1 dose (vert dist)	**0.51**	
elev pump off =	**4.77**	design OK
18 " pump influent	1.5	**ft**
elevation chamber bottom =	**3.27**	

Final Pump Chamber Design

4 Drip Field Application (final effluent) Final Effluent Pump Chamber Design

Use	**2,000**	gallon pump chamber				
length	153.00	inches	or	12' - 9"		
width	69.00	inches	or	5'-9"		
dist invert to inlet	48.00	inches	or	4.00	ft	
area	10,557	sq inch	or	73.31	sq ft	
CF/ ft rise =	73.31	CF/V ft	or	548	gal/vf	1 tank
CF/ ft rise note 1 =	146.63	CF/V ft	or	1,097	gal/vf	2 tanks

note 1: 2 tanks are computed with 2 times the tank width

5 Vertical Distance ffrom invert to high level alarm

1 day storage ADF = 1,500 gallons
1 day storage ADF = 200.53 cu ft

vert dist = 1.37 ft 16.41 inches

6 Float elevations:

elev invert in =	**7.78**	
vert dist 1 day storage (ADF) =	1.37	
elev high level alarm - upper limit peak operation =	6.41	
6 " space	0.50	ft
elev upper limit normal op & start peak range =	5.91	
vert dist normal operation	**0.63**	ft 7.6 inches
elev redundant pump off =	**5.28**	
18 " pump influent 1.5	**ft**	
elevation chamber bottom =	**3.78**	

1 Friction losses

Minor losses:

number of fitting	type of fitting	equivalent length	total
2	90° bend	10	20
2	45° bend	15	30
0	90° tee	15	0
	total		50 feet

Major losses:

31 = length of force main
50 = equivalent length
81 = total equivalent length

2 System Curve Calculations

Design Condition - Friction Head Hf (feet)

Distal Pressure (feet)
140 C
f = per Hazen - Williams equation

60.0 = Q - flow rate (gpm)
2 = inside diameter (inch)
0.0747 = f (ft per ft)
81.0 = total equivalent length
6.1 = Hf (Friction Head)

0.0 = Hend distal pressure (feet)
3.1 = Hs (static head - feet)
6.1 = Hf (Friction Head)

3 **9.2 = TDH @ Q=**

Condition 1- Friction Head Hf (feet)

Distal Pressure (feet)
140 C
f = per Hazen - Williams equation

70.0 = Q - flow rate (gpm)
2 = inside diameter (inch)
0.0993 = f (ft per ft)
81.0 = total equivalent length
8.0 = Hf (Friction Head)

0.0 = Hend distal pressure (feet)
3.1 = Hs (static head - feet)
8.0 = Hf (Friction Head)

11.2 = TDH

Condition 2- Friction Head Hf (feet)

0.0	Distal Pressure (feet)
140	C
f	= per Hazen - Williams equation
50.0	= Q - flow rate (gpm)
2	= inside diameter (inch)
0.0533	= f (ft per ft)
81.0	= total equivalent length
4.32	= Hf (Friction Head)
0.0	= Hend distal pressure (feet)
3.1	= Hs (static head - feet)
4.3	= Hf (Friction Head)
7.4	**= TDH**

4 Pump Selection:

Goulds M	Goulds WE03M (L)
1/3	horsepower
150 (230)	volts
1	phase 16/3 wire
10.7(4.9)	amps
1,750	rpm

Superior Tank, Inc.

P. O. Box 10, Bryantown, Maryland 20617

Phones:
274-3772 (Local)
870-3904 (D.C.)

884-3222
535-0040

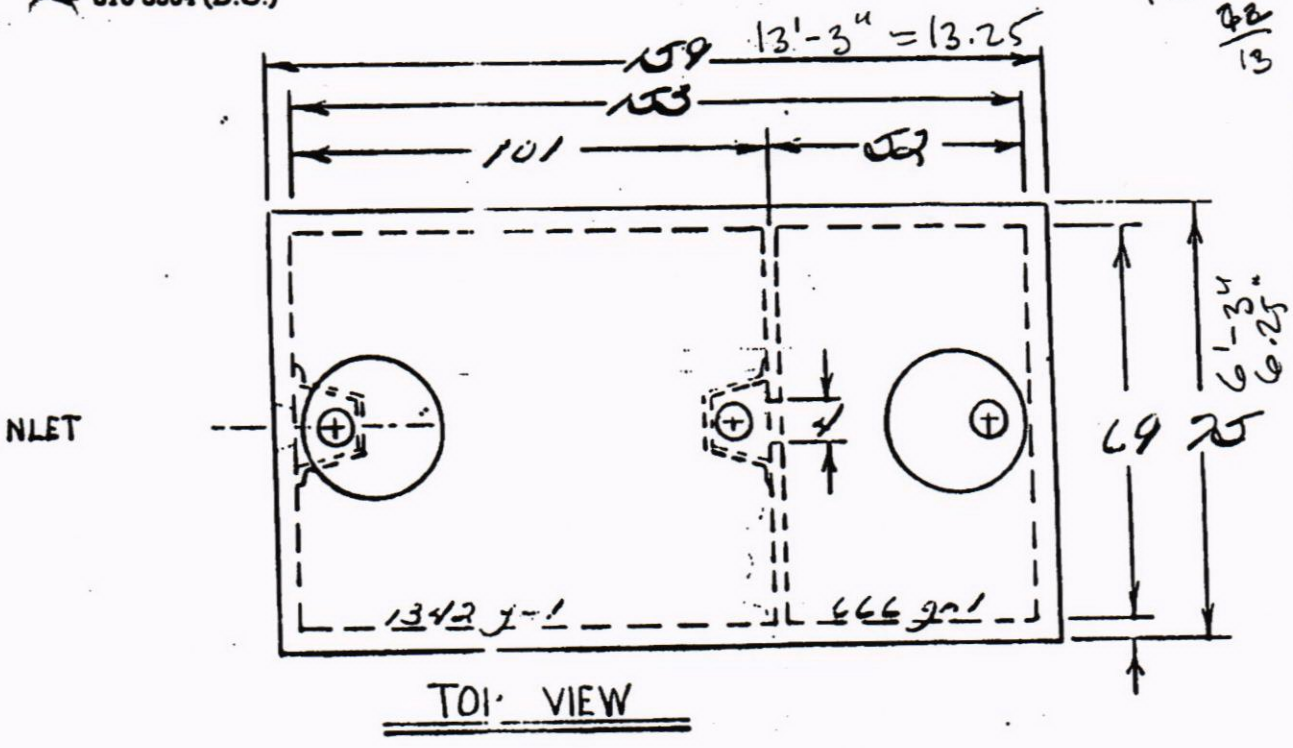
Manufacturers of:

750-2,000 GALLON CONCRETE SEPTIC TANKS

DRYWELL TOPS

DISTRIBUTION BOXES

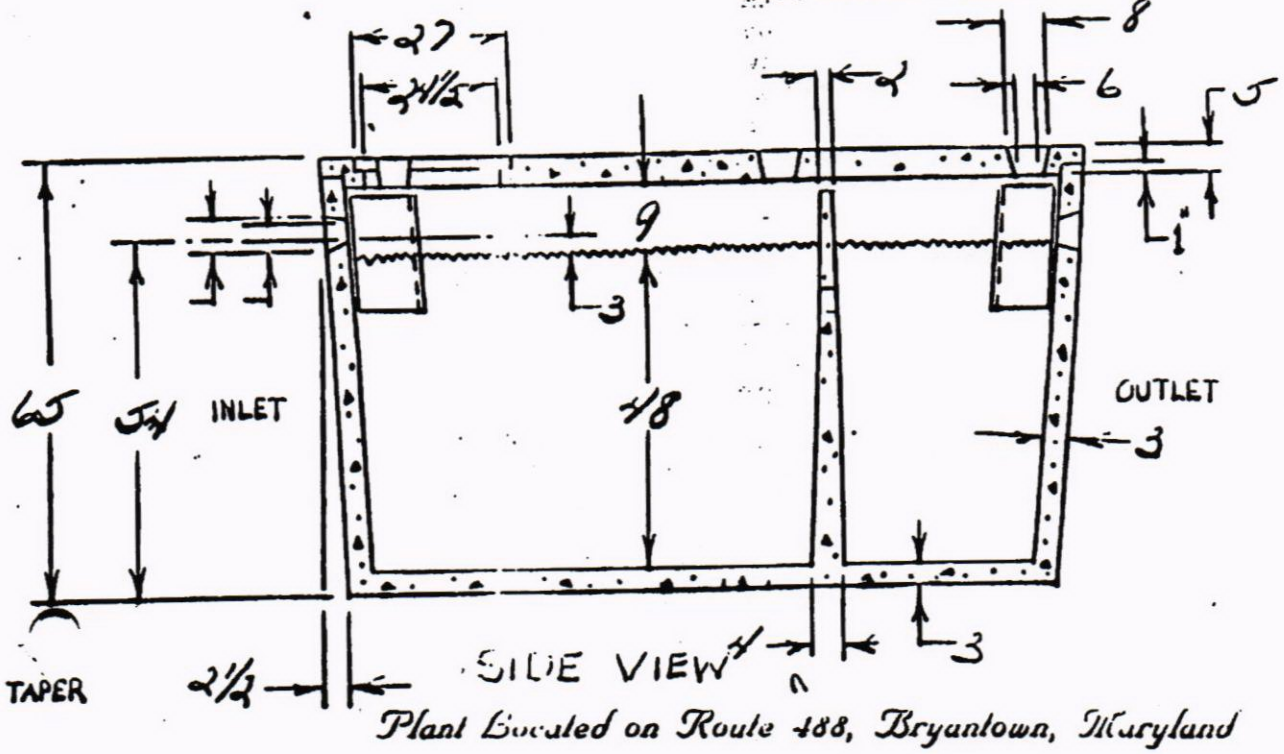
OIL INTERCEPTORS & GREASE TRAPS



TOP VIEW

2000 GALLON - TWO COMPARTMENT TOP SEAM TANK

Manufactured with 7 bag mix concrete & is reinforced with 6 x 6 #10 guage wire mesh & #3 bar @12" C.C. in Top, Bottom & Sides.



Plant Located on Route 488, Bryantown, Maryland

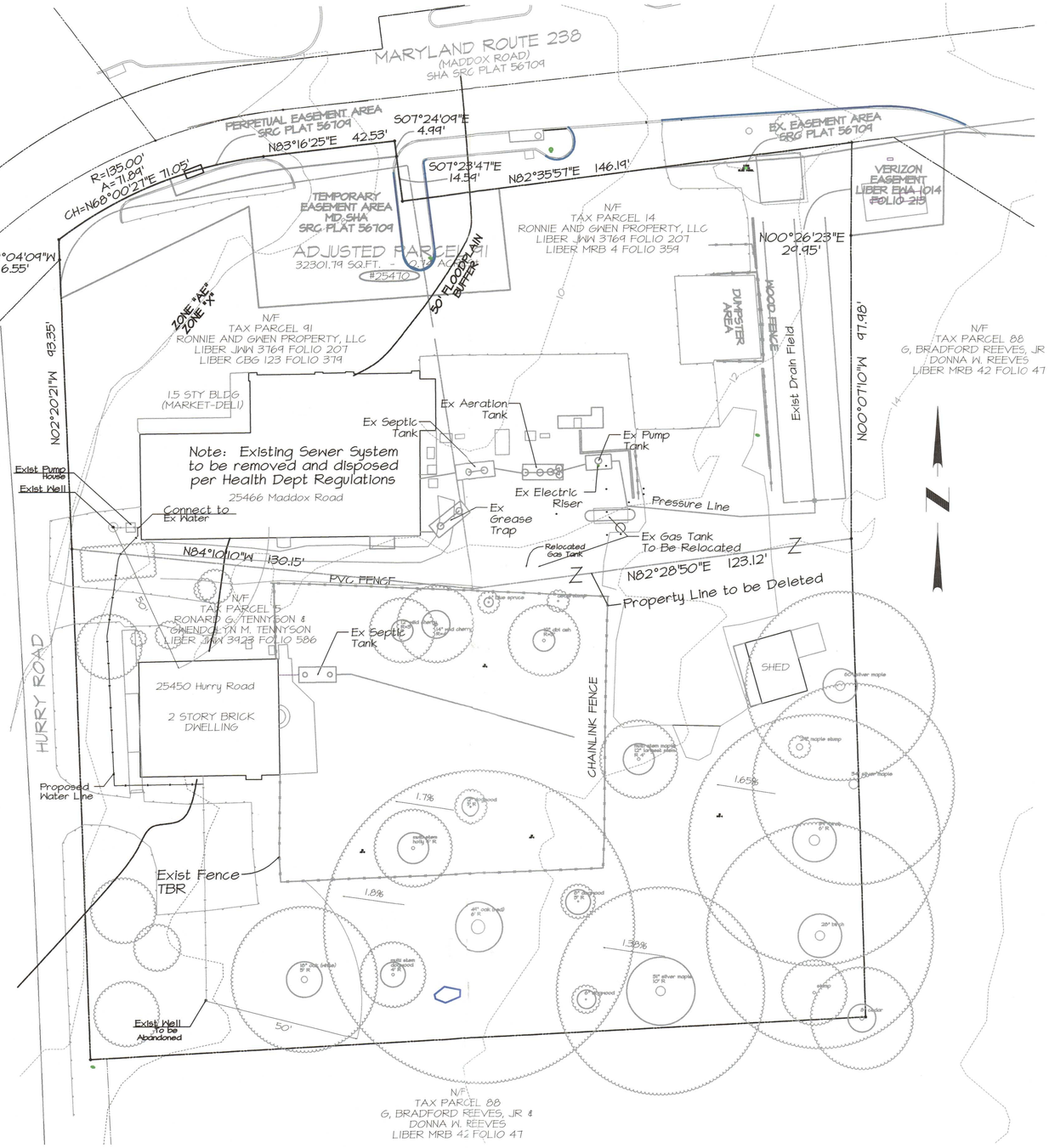
Pressure on the ground computation

concrete vol of walls
walls outside dim 13.25' x 6.25'= 82.81 sf
inside dim 12.75' x 5.75'= 73.31 sf
9.50 sf x 4.75' = 45.13 cf

Concrete vol of top & bottom
13.25' x 6.25= 82.81 sf
thickness 8" = 0.67 ft
vol = 55.48 cf
weight = 55.48 cf
= 45.13 cf
=========
total vol 100.61 cf
100.61 x 150 #/cf=15,092#

pressure on the ground empty
15,092# / 82.81 sf = 182.3 psf

pressure on the ground full
inside volume
73.31 sf x 4.75' = 348.2 cf
348.2 cf x 62.4 3/cf (water)= 21,729 #
full weight = 21,729# + 15,092# = 36,821#
full loaded pressure = 36,821# / 82.81 sf
pressure = 444.6 psf



Existing Conditions

Scale: 1" = ~~30'~~ 20'

General Property Notes
07/02/2023

Owner: Ronnie & Gwen Properties, LLC
c/o Jodi & Lucas Black
25466 Maddox Road
PO Box 175
Clements Maryland 20624

Property: Tax Map 0017, Grid 0021, Parcel 0091
Tax ID 04-017757 - 25466 Maddox Road
Site Area 32301 sq ft or 0.74 acre
Zoning VMX CA-LDA
Deed reference 05318 page 0378
and
Tax Map 0017, Grid 0021, Parcel 0005
Tax ID 04-013212 - 25450 Hurry Road
Site Area 1.2097 acre
Zoning VMX CA-LDA
Deed reference 03923 page 0586

HEALTH DEPARTMENT GENERAL NOTES

11/14/2023

NOTICE: 1. The contractor or owner must contact St. Mary's County Health Department at 301.475.4321 and MDE at 410.537.3674 72-hours prior to the start of any construction work on the site to schedule a pre-construction meeting. The contractor, Health Department Representative, and the OSDS Designer must participate at the pre-construction meeting. The Owner is responsible to have the OSDS designer stake the location of the on-site disposal field prior to the pre-construction meeting. The MDE Representative must be notified and may participate at the discretion of the Health Department (Approving Authority). Construction procedures, examination of disposal system soil to verify moisture content, staging material, specific inspection requirements, location of the on-site system as-staked must be inspected and approved by the Health Department, and other items required by the Health Department are to be discussed at the pre-construction meeting.

NOTICE: 2. Construction of the on-site disposal system may not be permitted after the soil moisture has reached a point where the soil within the upper 10 inches forms a ribbon when rolled in the hand. This date usually occurs in early November with the arrival of wet weather. If wet conditions persist, construction may not occur from November to April. However, given the variability of weather patterns, determinations for installations during this period may be evaluated on a case by case basis.

NOTICE: 3. The area where the Drip Irrigation tubing is to be installed must be protected from any and all equipment crossing, compaction, or any type of disturbance. Construction procedures and staging material to be discussed at the pre-construction meeting.

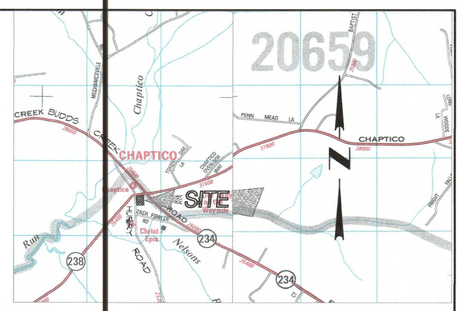
NOTICE: 4. Inspection Requirement: The permittee shall provide a qualified on-site system inspector to inspect the system installation during the construction period. The inspector shall ensure that the system is installed according to the pretreatment system, dispersal system and other relating appurtenance plans approved by the County and MDE. The inspector shall also record any necessary revisions for the purpose of preparing as-built drawings and obtain permission from the design engineer, the County and MDE. This requirement is in addition to County Health Department and MDE inspections. See Note 5 below.

NOTICE: 5. Contact "Miss Utility" at 1.800.257.7777 at least forty-eight hours prior to any work on the project. Utilities not covered by "Miss Utility" are to be contacted separately. Existing utilities such as water service lines, telephone, and television cable shall be moved as necessary for proper installation of sewage disposal system.

1. The property Owner shall maintain and operate all new and existing BAT systems for the life of the system. The Owner must maintain a yearly Operation & Maintenance (O & M) agreement with a qualified sewage system operator for the On-site Disposal System. A yearly O&M permit application permit application is required to be submitted to the St Mary's County Health Department in conjunction with the food service license.
This parcel/lot is to be served by an innovative/alternative sewage disposal system. The innovative system designed for 2,459 gpd treatment and house that is limited to 3 bedrooms or 2,499 square feet of living space. The land application portion of the system includes a designated area of 15,316 square feet with an application rate of 0.20 gpd per square foot. The sewage disposal system design is based on computations by LSR, Inc and shown on plan set, and approved 11/28/2023 by the St. Mary's County Health Department. Plan set dated 11/14/2023
2. This site is (to be) served by an existing deep well drilled to a confined aquifer.
3. This plan is in compliance with the St. Mary's County Comprehensive Water and Sewerage Plan. The water and sewer categories are NPS.
4. All work to be performed in accordance with applicable regulations of the St. Mary's County Health Department. The contractor that is responsible for the work shown on this plan shall be certified by MDE to install innovative disposal systems.
5. Inspection Requirement: The permittee shall provide a qualified on-site system inspector to inspect the system installation during the construction period. The inspector shall ensure that the system is installed according to the pretreatment system, dispersal system and other relating appurtenance plans approved by the County and MDE. The inspector shall also record any necessary revisions for the purpose of preparing as-built drawings and obtain permission from the design engineer, the County and MDE. This requirement is in addition to County Health Department and MDE inspections.
6. The contractor shall take all necessary measurements to assure proper fabrications and installation of the work shown. Information shown on the construction drawings relating to boundary and existing conditions and/or locations of existing structures, utilities, or other site improvements has been compiled from available information, record maps and field location surveys and is not guaranteed correct. The locations and elevations shall be verified by the contractor prior to the start of construction. If any conflicts exist between actual field conditions and the plan the contractor shall notify the Engineer immediately for resolution.
7. Any damages to service roads, pavement areas, trees, landscape items, utilities or other facilities shall be repaired by the contractor. All disturbed areas shall be restored in kind and to a condition equal or better than that which existed prior to construction at no additional cost to the owner.
8. Unless otherwise shown, there are no known wells or septic systems within 100' of the proposed septic system.
9. Disturbance (i.e. grading, tree stumps removed, extensive traffic, etc.) of any portion of the sewage disposal area is not permitted and may compromise the construction of the system. The building permission slip issued by the Health Department may be voided for disturbances of these type.

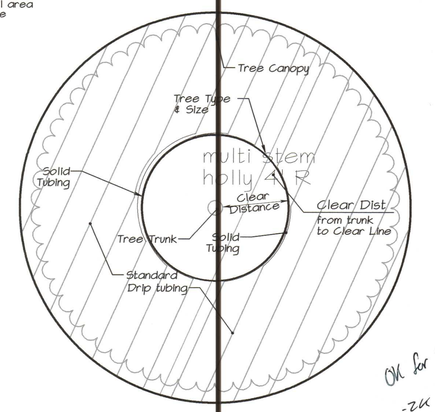
Lateral Table

Zone	Lateral Number	outgoing (feet)	incoming (feet)	length (feet)	Zone Length (feet)	
A	1	140	141	281	longest lat Zone A	
	2	137	135	272		
	3	135	127	262	area no tubling (sf)	
	4	133	132	265	224	
	5	131	133	264		
	6	135	142	277		
	7	142	134	276		
A	8	131	142	**273**	2170	8
B	9	133	138	271		
	10	142	136	278	2719	
	11	121	123	244		
	12	135	143	278		
	13	144	144	288	longest lat Zone B	
	14	135	131	266	area no tubling (sf)	
	15	129	145	274	293	
B	16	78	79	**157**	2056	8
C	17	80	83	163		
	18	95	95	190	longest lat zone C	
	19	94	94	188		
	20	94	94	188		
	21	96	79	175	area no tubling (sf)	
	22	74	73	147	225	
	23	80	94	174		
C	24	95	94	**189**	1414	8
D	25	95	94	189		
	26	95	94	189		
	27	95	94	189		
	28	95	94	189	longest lat zone D	
	29	81	80	161		
	30	79	80	159	area no tubling (sf)	
	31	80	80	160	236	
	32	82	83	165		
D	33	86	88	**174**	1575	9



VICINITY MAP

scale: 1" = 2,000'



Drip Tubing - Root Avoidance Detail

Scale: 1" = 5'

Ok for Sign
-ZK
11/27/23

RECEIVED
NOV 15 2023
ST MARY'S CO. HEALTH DEPT
ENVIRONMENTAL HEALTH

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the state of Maryland, license no. 17625, expiration date 12/11/2023.

STATE OF MARYLAND
William L. Menefee
No. 17625
REGISTERED
PROFESSIONAL ENGINEER

Approval Block

Approved by MDE 3/20/2024
Maryland Department of the Environment Date

Director of Environmental Health 11/28/2023 Date

BLAP Recorded

Designed By: WLM	LSR Job 0124-21
Approved By: WLM	
Date: 06/30/2023	Scale: As Shown
Revised per HD com'ts 11/01/2023	11/14/23
Revised per HD com'ts 08/10/23	10/06/23
Revision	Date

LSR
LITTLE SILENCES REST, INC.
41650 Courthouse Drive - Suite 101 - P. O. Box 2340
Leonardtown, Maryland 20650
Phone: (301) 475-2236 - Fax: (301) 475-3720

Alternative & Innovative
On-site Sewage Disposal System
Chaptico Market
25466 Maddox Road
Located in Chaptico, Maryland
Tax Map 0017, Bk. 0021, P. 0005 & 0091
4th Election District St. Mary's Co., Maryland

Tax Id 04-017757 & 04-013212 Sheet 1 of 3

Client: Chaptico Market
Location: 25466 Maddox Road, Chaptico Maryland 206

Date: 10/10/2023

Netafim Bioline: 17mm .6gph 24in spacing @ 2fps Flush

Maximum Recommended Bioline Lateral Length: 300

1. Soil Texture or Perc Time: 0
2. Soil Structure Shape: 0
Soil Structure Grade: 0
3. Infiltration Loading Rate(ILR): 0.2 gal/day/ft^2
4. Slope: 1.8 %
5. Infiltration Depth: 8 in.
6. Hydraulic Linear Loading Rate: 13.85 gal/day/ft
7. Maximum Contour Length (MCL): 145 ft
8. Daily Flow
16.39 (No. of Bedrooms) X 150.00 (Flow / Bedroom) = 2,459.00 (GPD)
9. Dosing Area
2,459.00 (Daily Flow) / 0.20 (ILR) = 12,295.00 (sqft)
10. Dosing A. Length
2,459.00 (Daily Flow) / 13.85 (HLLR) = 177.55 (ft)
11. Dosing A. Width
12,295.00 (Dosing Area) / 177.55 (Dosing A. Length) = 69.25 (ft)
11a. Dosing Design Width & Length Adjustment
Design Width 130.00 ft Adjusted Dosing Length 145.00 ft
12. Required Dripper Line
15,280.00 (Dosing Area) / 24 (Drip line Spacing) = 7,640.00 (ft)
13. Required Zones
145.00 (Dosing A. Length) / 145.00 (MCL+) = 1.00 (Theoretical) = 4 (Design Zones)

17. Headworks Head Loss: 23 ft
18. Miscellaneous Head Loss: 12 ft
19. Design Total Dynamic Head: 97.6 ft

20. Pump Data: **MINIMUM Pump Specifications**

Goulds Blaster Model 20EB05 — Pump Model Selected
0.5 HP 1 Phase 120 Volts 24.3 GPM @ 97.6 FT.
Note: Selected pump must produce 115 ft @ 12gpm or 35 gpm for filter flush depending on filter model. (auto-flush units only)

21. Dosing Schedule

Peak Flow Adjustment 4.00 Minutes

Peak
Total Run Time: 214.0 Minutes
Total Rest Time: 1226.0 Minutes

Average
Total Run Time 128.4 Minutes
Total Rest Time 1311.6 Minutes

	GPM	Min/Dose	Gal/Dose	Cycles/Day
Peak				
Zone 1	11.5	10.0	114.9	5.3
Zone 2	11.1	10.0	111.2	5.3
Zone 3	7.7	10.0	77.0	5.3
Zone 4	8.0	10.0	79.8	5.3
Zone 5	0.0	0.0	0.0	0.0
Zone 6	0.0	0.0	0.0	0.0
Avg				
Zone 1	11.5	6.0	68.9	5.3
Zone 2	11.1	6.0	66.7	5.3
Zone 3	7.7	6.0	46.2	5.3
Zone 4	8.0	6.0	47.9	5.3
Zone 5	0.0	0.0	0.0	0.0
Zone 6	0.0	0.0	0.0	0.0

Portion of Peak Daily Flow 60%

14. Zone Breakout Table

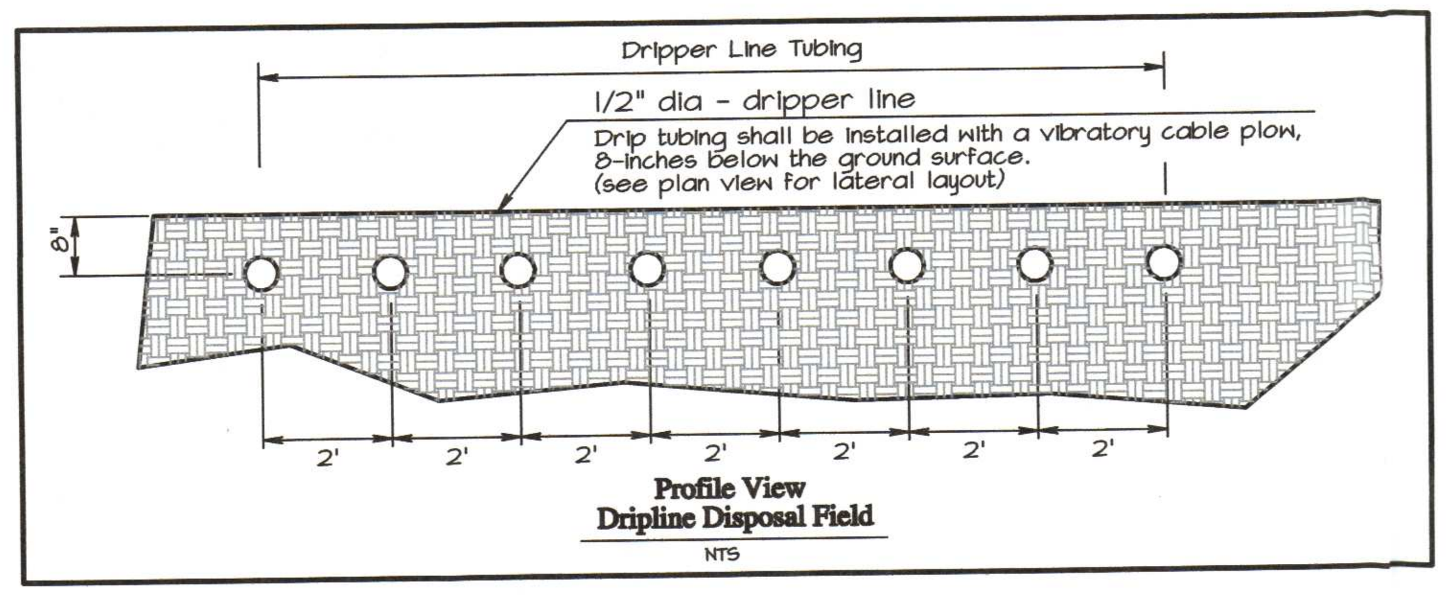
Zone No.	a. Zone Dosing Area (sqft)	b. Linear Ft. of Tubing (ft)	c. Longest Lateral (ft)	d. Dosing Flow Rate (gpm)	e. Number of Distal Ends	f. Field Flush Rate (gpm)	g. Required Total Flow (RTF) (gpm)	h. Field Flushing Head (ft)	i. Force Main Supply Line: Pipe Nom. Dia. (in)	j. Force Main Supply Line: Len. of Run (ft.)	k. Force Main Supply Line: Head Loss (ft)	l. Return Flush Line: Pipe Nom. Dia. (in)	m. Return Flush Line: Len. of Run (ft.)	n. Return Flush Line: Head Loss (ft)	o. Static Lift (ft)	p. Total Field Head Loss (TFHL)
Zone A	4560.0	2268.0	281.0	11.5	8.0	12.8	24.3	46.3	1 1/2	90.0	3.2	1 1/4	90.0	2.1	3.0	55.6
Zone B	4375.0	2195.0	288.0	11.1	8.0	12.8	23.9	48.2	1 1/2	95.0	3.3	1 1/4	95.0	2.2	3.5	59.2
Zone C	3025.0	1520.0	290.0	7.7	8.0	12.8	20.5	48.7	1 1/2	150.0	3.9	1 1/4	150.0	3.4	4.0	62.6
Zone D	3417.0	1575.0	189.0	8.0	9.0	14.4	22.4	25.3	1 1/2	150.0	4.6	1 1/4	150.0	4.3	4.5	40.6
Zone 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1 1/2	150.0	0.0	1 1/4	150.0	0.0	6.5	6.6
Zone 6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0	0.0	0.0	0	0.0	0.0	0.0	0.1

Note: (14c) Longest lateral may be looped one or more times and is a function of: (7) contour length, Bioline lateral length, #of distal ends, #of zones and (10) dosing area length.

Notes:

15. Max Required Total Flow: 24.3 (Largest RTF Based on 14g.)

16. Max Total Field Head Loss: 62.6 (Largest TFHL Based on 14p.)



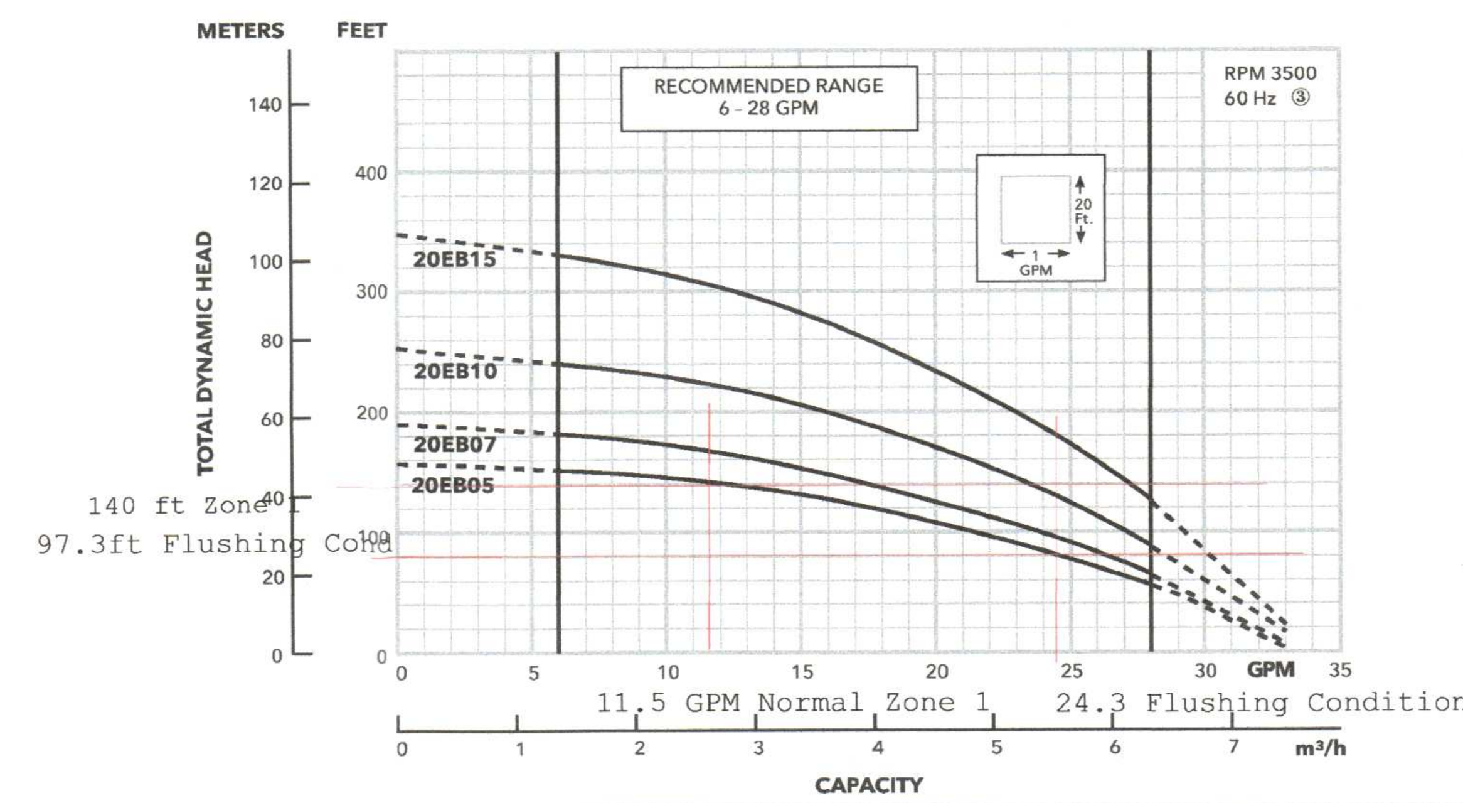
Profile View
Dripline Disposal Field
NTS

Goulds Water Technology

Wastewater

MODEL 20EB

Chaptico Market
June 29, 2023



Goulds Water Technology

Wastewater

Chaptico Market ID 04-17757
25466 Maddox Road
Oct 10, 2023

MODELS

Order Number	HP	Phase	Volts	RPM	Impeller Diameter (in.)	Maximum Amps	Locked Rotor Amps	KVA Code	Full Load Efficiency %	Resistance Start	Resistance Line-Line	Power Cable Size	Weight (lbs.)
WE0311L	0.33	1	115	1750	5.38	10.7	30.0	M	54	11.9	1.7	16/3	56
WE0318L			208			6.8	19.5	K	51	9.1	4.2		
WE0312L			230			4.9	14.1	L	53	14.5	8.0		
WE0311M			115			10.7	30.0	M	54	11.9	1.7		
WE0318M			208			6.8	19.5	K	51	9.1	4.2		
WE0312M			230			4.9	14.1	L	53	14.5	8.0		
WE0511H			115			14.5	46.0	M	54	7.5	1.0	14/3	60
WE0518H			208			8.1	31.0	K	68	9.7	2.4	16/3	60
WE0512H			230			7.3	34.5	M	53	9.6	4.0		

Goulds Water Technology

Wastewater

Chaptico Market ID 04-17757
25466 Maddox Road
Oct 10, 2023

APPLICATIONS

Specifically designed for the following uses:
- Homes, Farms, Trailer Courts, Motels, Schools, Hospitals, Industry, Effluent Systems

SPECIFICATIONS

Pump
- Solids handling capabilities: ¾" maximum.
- Discharge size: 2" NPT.
- Capacities: up to 140 GPM.
- Total heads: up to 128 feet TDH.
- Temperature: 104°F (40°C) continuous, 140°F (60°C) intermittent.
- See order numbers on reverse side for specific HP, voltage, phase and RPM's available.

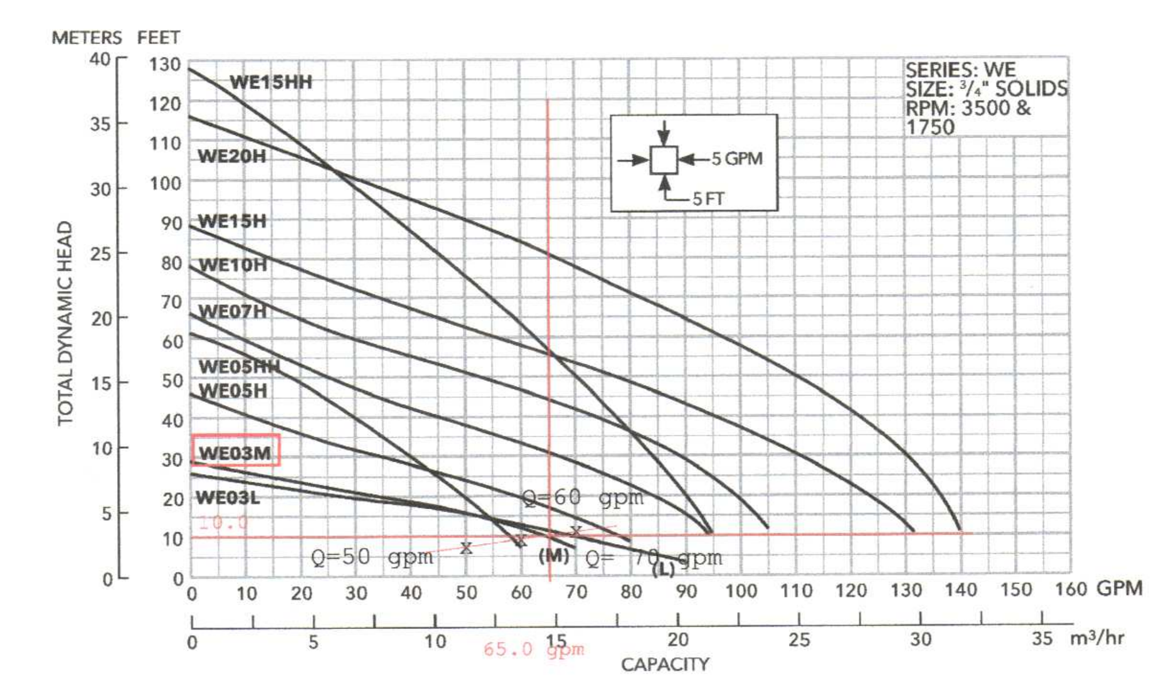
MOTORS
- Fully submerged in high-grade turbine oil for lubrication and efficient heat transfer.
- Class B insulation on ⅓ - 1½ HP models.
- Class F insulation on 2 HP models.

Single phase (60 Hz):
- Capacitor start motors for maximum starting torque.
- Built-in overload with automatic reset.
- SJTOW or STOW severe duty oil and water resistant power cords.
- ⅓ - 1 HP models have NEMA three prong grounding plugs.
- 1½ HP and larger units have bare lead cord ends.

Three phase (60 Hz):
- Class 10 overload protection must be provided in separately ordered starter unit.
- STOW power cords all have bare lead cord ends.
- Designed for Continuous Operation: Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage when fully submerged.
- Bearings: Upper and lower heavy duty ball bearing construction.
- Power Cable: Severe duty rated, oil and water resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking. Standard cord is 20'. Optional lengths are available.
- O-ring: Assures positive sealing against contaminants and oil leakage.

AGENCY LISTINGS

Tested to UL 778 and CSA 22.2 108 Standards By Canadian Standards Association File #LR38549



PAGE 2

When supply and return headers are installed going up (with) the slope, check valves help to prevent the zone's effluent from draining down to the lowest point or flowing back to the dose tank.

Loops and Flexible Connections: Bioline® dripperline or Bioline blank tubing can easily be made to turn 180 degrees in applications where the rows are 24" apart. However, for maximum long-term protection against kinking, especially in freeze-thaw conditions, it is common practice to install flex PVC pipe whenever a turn of 45 degrees or more is made. These flex connections are used to prevent the possibility of kinking the dripperline which could reduce or shut off the flow. Flexible connections are also used to connect Bioline to the supply and return manifolds. The primary purpose in this case is to ensure that any sharp objects or other debris that may be in the trenches of the supply and flush headers do not cut the dripperline. It also helps to protect against the shrinking, swelling, movement and settling of the soils.

The flex connection also prevents dripperline flow from entering the trench of the supply and flush manifolds. Because these trenches may run up and down slope, they can become drains, with the potential for effluent surfacing at the downstream end. As such, it is highly recommended that the dripperline not drip into the trench.

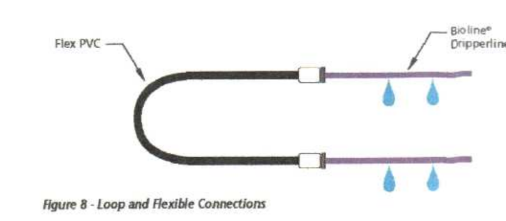


Figure 8 - Loop and Flexible Connections

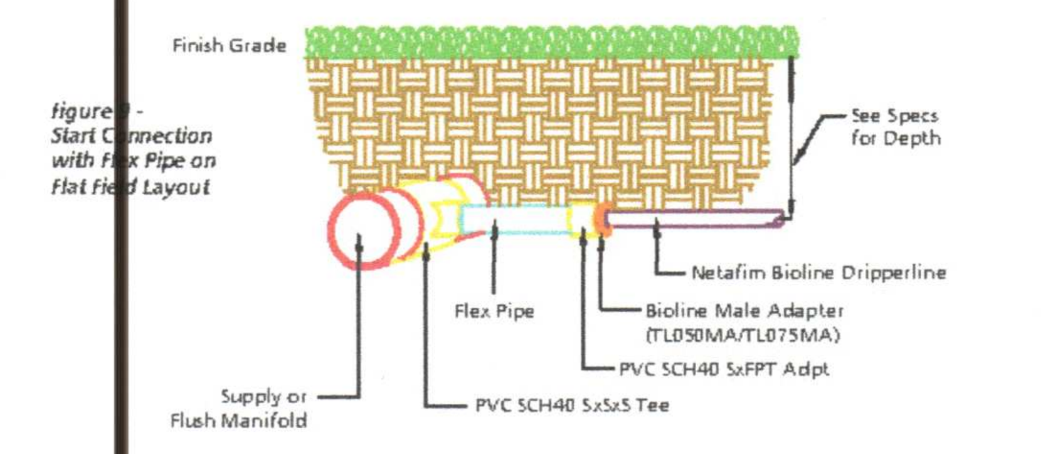


Figure ... Start Connection with Flex Pipe on Flat Field Layout

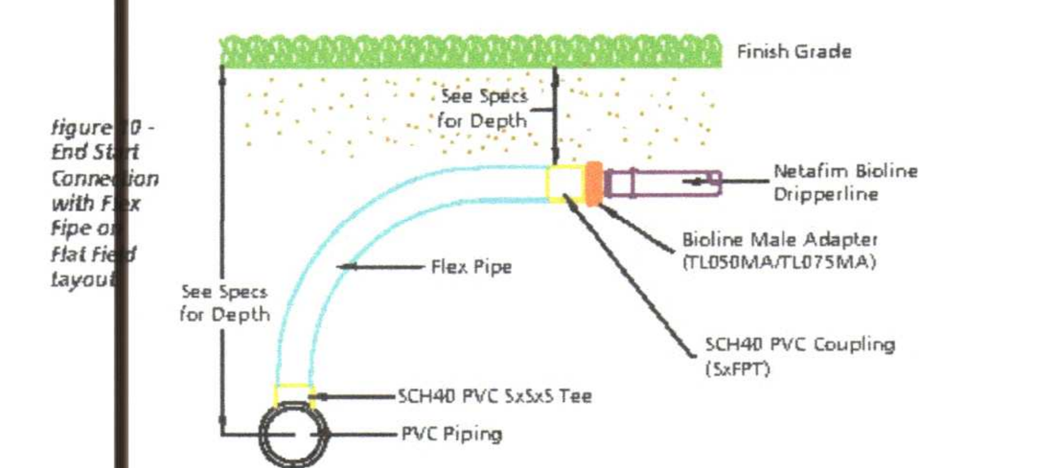


Figure ... End Start Connection with Flex Pipe on Flat Field layout

Supply Line: While most systems use Schedule 40 PVC, the correct pipe should be used to match the conditions. Check local code.

Supply Manifold: Schedule 40 PVC (or as appropriate for conditions) piping is the standard of design where the effluent is distributed to the Bioline® via flex connections. Drops in system pressure should be minimized to ensure that a sufficient flushing velocity is maintained. Connections to the supply and flush manifolds (number of laterals) should be minimized for system efficiency.

Dripperlines: Effluent flows through Bioline and into the soil through its emitters (drippers). The emitters each have a specific flow rate of 0.4, 0.6, or 0.9 gallons per hour (GPH). The flow rates are designed to prevent overloading of the soil and allow the designer to match the capacity of the soil to the flow rate of the dripper. In general, the lower the dripper flow rate, the slower the infiltration rate of the soil.

Flush Manifold: The characteristics of the flush manifold are the same as the supply manifold both in terms of material, size and number of connections.

Flush Line: In an effort to reduce the use of different size pipes and fittings, the flush line is typically the same size and type as the flush manifold. However, it can be sized as a function of the actual flow (which is less than the supply pipe delivers due to the dosing that occurs in the dripline) and the distance it has to travel back to where it terminates. It normally terminates at the front end of the treatment system in systems when intermittent dripline flushing is being done or into the dosing tank though the flow inducer when used with

Systems Drip Service Form

Inspection Date: ______
System Owner: ______
Address: ______
City, St., Zip: ______

Inspected Items:	Operational	Inoperative	Not Applicable
Aerator & Aeration Plumbing	☐	☐	☐
Air Filter Cleaned........	☐	☐	☐
Alarm Operational........	☐	☐	☐
Riser(s) at or Above Finished Grade........	☐	☐	☐
Pre Treatment/Clarifier inspection........	☐	☐	☐
Effluent Pump	☐	☐	☐
Drip Filter Cleaned........	☐	☐	☐
Vegetation over Drainfield........	☐	☐	☐
Pressure Check on Air Release	☐	☐	☐

Supply Pressure______ Return Pressure______

Perform manual field flush (engage bypass and run pump for same run time as a scheduled dose).
MAKE SURE TO PUT SYSTEM BACK INTO FIELD RUN MODE BEFORE YOU LEAVE....☐DONE ☐NOT DONE

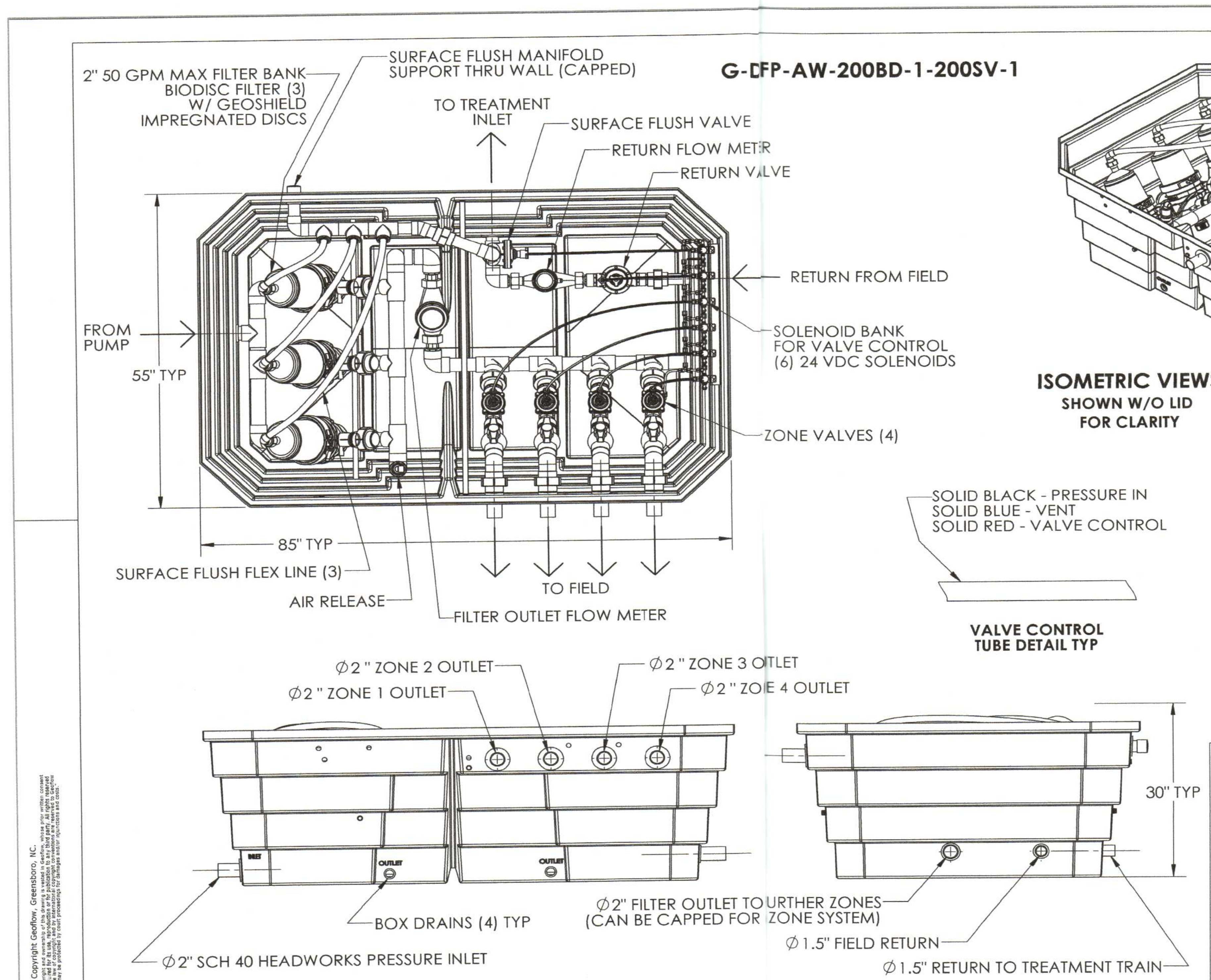
Step Through Modes and Verify Operation

Mode 1______ Verify System Status (Water Levels, Photocell)
Mode 2______ Force on Air & Effluent Pump (if water present)
Mode 3______ Air Back Pressure (in WCI)
Mode 4______ Last 4 Alarms (if present)
Mode 5______ Clear Alarm Memory

Reset Controller, one long beep at Startup? Yes:______ (if No, clear memory, Mode 5)

Verify Green Solid Green Light when leaving: ______

______ ______ **Inspector Name, Signature**



Geoflow
PO Box 27457 Greensboro, NC 27417
Phone 1-888-828-3388
www.geoflow.com

Drawing Title: DripFilter Master Drawing
Sheet: 2 of 6 | Rev: B | Drawn by: ALL | Drawn date: 5/1/23
Dwg. No.: G-DFX-XX-200BD-X-200SV-X

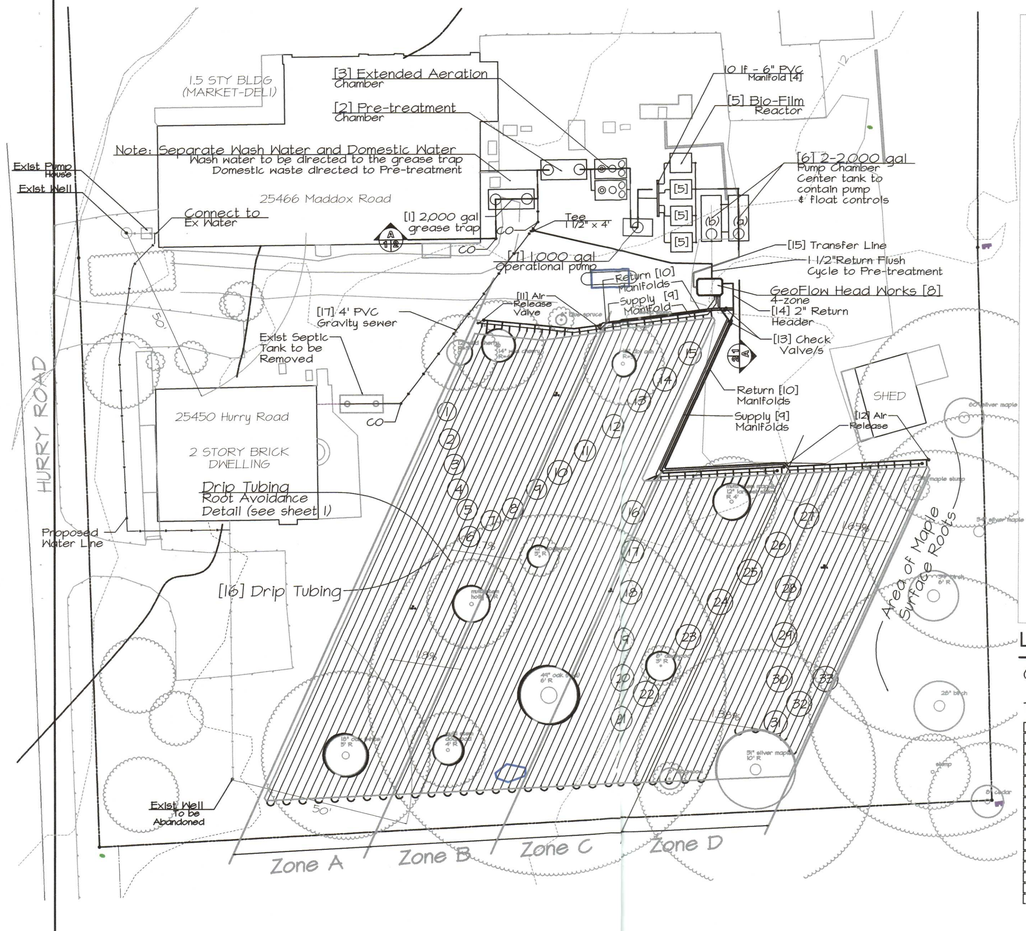
Tax Id 04-017757 & 04-013212 Sheet 3 of 3

Approval Block		
Approved by MDE 3/20/2024	Maryland Department of the Environment	Date
[signature] 11/28/2023	Director of Environmental Health	Date

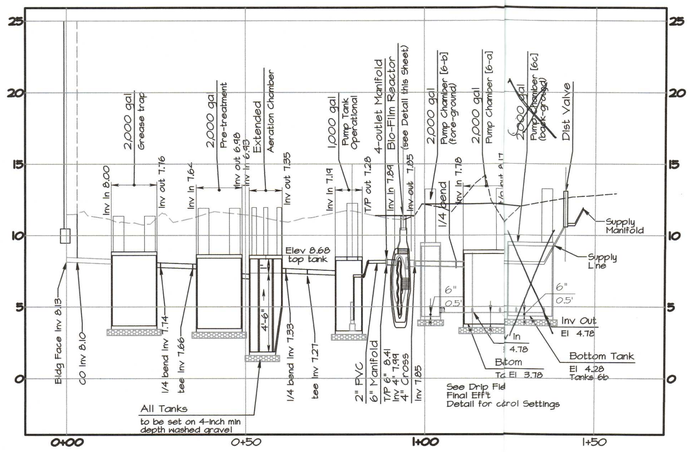
Designed By: WLM	LSR Job 0129-21
Approved By: WLM	
Date: 06/30/2023	Scale: As Shown
Revised per HD com'ts 11/01/2023	11/14/23
Revised per HD com'ts 08/10/23	10/06/23
Revision	Date

LITTLE SILENCES REST, INC.
41650 Courthouse Drive - Suite 101 - P. O. Box 2340
Leonardtown, Maryland 20650
Phone: (301) 475-2236 - Fax: (301) 475-3720

Alternative & Innovative
On-site Sewage Disposal System
Chaptico Market
25466 Maddox Road
Located in Chaptico, Maryland
Tax Map 0017, Bk. 0021, P. 0005 & 0091
4th Election District St. Mary's Co., Maryland

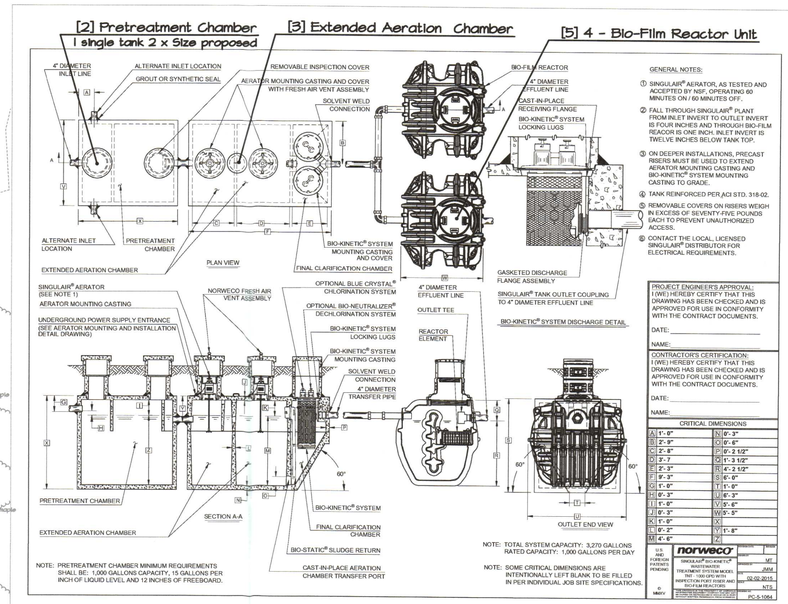


Scale: 1" = 20'



Drip Irrigation System Profile

Scale: 1" = 20'
Vertical: 1" = 5'

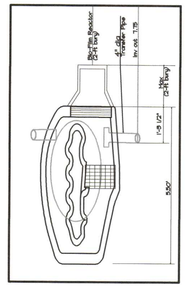


Legend for Treatment System Components

(refer to Singular Bio-Kinetic Wastewater Treatment System Model TNT-10000PD & Bio-Film Reactors)

This Design proposes to use 2 systems working in Parallel

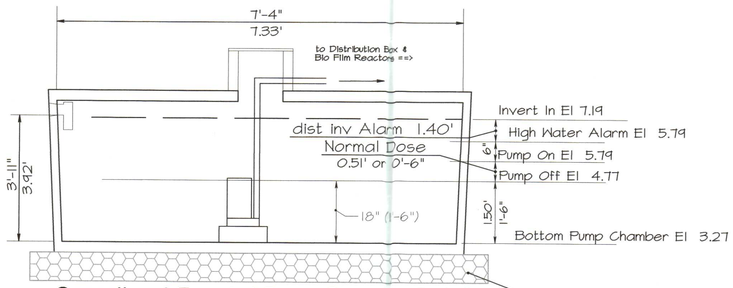
[1] 1 - 2,000 gallon grease trap
[2] 1- Pre-treatment chamber - 2,000 gallon concrete tank with baffles
[3] 2 - Extended Aeration Chamber
[4] 1 - 6" PVC transfer manifold
[5] 4 - Bio-Film Reactor units
[6] 2-2,000 gallon pump chamber [a, b, & c] equiped with a duplex pump sys tem.
[7] 1-1,000 gallon operation pump tank equiped with a duplex pump system
[8] 1-GeoFlow Headworks
[9] 1 1/2" Sch 40 PVC supply manifold
[10] 1 1/4" Sch 40 PVC return manifold
[11] 4 - air release valves - 1 1/2" (supply)
[12] 4 - air release valves - 1 1/4" (return)
[13] 4 - 1 1/4" check valves
[14] 2" PVC Return Header
[15] 2" PVC sch 40 transfer Line
[16] 1/2 inch drip tubing Geoflow
[17] 4-inch gravity sewer



(5) Bio-film Reactor Detail

not to scale

Operational Pump to be equipped with a duplex pump system. Control panel to provide High level alarm, pump on and off, alterating between pumps during normal operation, and single pump operation when there is a single pump failure to pump. ☆

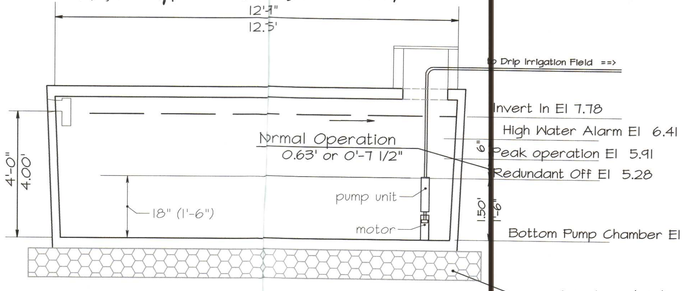


Operational (Transfer) Pump Chamber Detail

not to scale

Pump Chamber: Based on Superior Tanks precast 1,000 gallon tank.
Inside dimension: L: 99 Inches (8'-3") , W: 57-Inches (4'-9"),
H Inv In to bottom: 47-Inches (3.92')
volume is 39.18 cu ft per foot or 293 gallons per foot.
Vertical rise for Q=Design Flow = 1,500 gpd/10 doses per day = 246 gallons or 0.83 ft or 10-Inches

☆ Note applies to Final Effluent Pump as well.



Drip Field Application (Final Effluent) Pump Chamber Detail

no to scale

Pump Chamber: Based on Superior Tnks precast 2,000 gallon tank.
Inside dimension: L: 153 Inches (12'-9") W: 69-Inches (5'-9"),
H (Inv In to Inside bottom): 48-Inches (00')
volume is 73.31 cu ft per foot or 548 allons per foot (per tank).
volume is 146.6 cu ft per foot or 1,096gallons per foot (per 2-tanks).
Vertical rise for Q (ADF) = > 1,500 gp = 200.5 cf/day
or 1.37 ft or 16.4-Inches

STATE OF MARYLAND
William L. Mahaffey
No. 17625
REGISTERED
PROFESSIONAL ENGINEER

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the state of Maryland, license no. 17625, expiration date 12/11/2023.

Approval Block

Approved by MDE 3/26/2024
Maryland Department of the Environment Date

Director of Environmental Health 11/28/2023 Date

Designed By: WLM	LSR Job 0129-21
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Date: 06/30/2023	Scale: As Shown
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Revision	Date

LSR
LITTLE SILENCES REST, INC.
41650 Courtouse Drive - Suite 101 - P. O. Box 2340
Hollywood, Maryland 20636
Phone: (301) 475-2236 - Fax: (301) 475-9720

(11/14/2023)

MATERIAL/EQUIPMENT REQUIREMENTS & INSPECTIONS NOTES

Treatment System

See drawings for details and specifications. The equipment is to be installed per manufacturers instructions.
Contact:
Earnshaw Brothers
(301) 274-3969
12723 LaPlata Road
Bryanstown, Maryland 20617

Inspection Requirement:
The permittee shall provide a qualified on-site system inspector to inspect the system installation during the construction period. The inspector shall ensure that the system is installed according to the pretreatment system, dispersal system and other relating appurtenance plans approved by the County and MDE. The inspector shall also record any necessary revisions for the purpose of preparing as-built drawings and obtain permission from the design engineer, the County and MDE. This requirement is in addition to County Health Department and MDE inspections.

TREATMENT & CONCRETE TANKS
1. All wastewater treatment tanks are to concrete except as noted.
   1) 1-2,000 gallon grease trap
   2) 1-2,000 pre-treatment tank
   3) 2- Norweco Extended Aeration tanks equipped with equipments as specified on the drawings (Norweco TNT 1000gpd) Each unit to be capable of treating the sewage from the business and dwelling at 1,225 gpd of (2 x 1,225 = 2,450 gpd). units, see detail on the plan.(4-Bio Film Reactor units are not installed in concrete tanks. They are delivered ready to installed.)
   4) 1-1,000 gallon operational pump chambers to lift the processed effluent to the elevation of the Bio-Film Reacator
   5) 2-2,000 gallon pump chambers (provide adequate storage for the pump to be flooded, operating dose, and 1 average daily flow (1,500 gallons). See detail on the plan.
2. The effluent from the treatment system shall meet the criteria of the Maryland Bay Restoration Fund (BRF). The treatment requirement for the BRF - the system shall be capable of reducing the total nitrogen concentration by at least 50% as a minimum treatment, and treatment system shall be capable of treating the sewage to reduce BOD(5) and TSS not to exceed 300 mg/l.
3. All concrete tanks must be watertight and meet all horizontal separation distances specified in State and County regs.
   - constructed with seams and joints above the high water table,
   - tar-coated or water proofed by the manufacturer,
   - protected against buoyant forces. If high ground water conditions exist, contact engineer or directions and guidance.
4. A 24-hour leakage test shall be required to demonstrate water tightness prior to the final construction approval.

PUMPING SYSTEM & CONTROLS
1. - The control panel/s are to be installed in a manner to be accessible for diagnostics. The control box or panel shall be located outside the pump chamber in sight of the of the pump chambers so that the panel can be view while servicing the equipment.
   - The panel shall be UL listed and a watertight enclosure.
   - Electrical work to be in accordance with local and state codes.
   - All switches and controls are to be labeled.
   - Electrical components to be protected from electrical surges
   - Control Panel equipped with the following functions:
     1. elapsed run time meter (for each pump)
     2. event counter (non re-set)
     3. flow meter (gallons)
     4. pump alternator (for duplex pump operation)
   - high level alarm to be wired to a separate circuit
2. The pumps shall be set on a 6 inch block or suspended from the top of the chamber a minimum of 6" from the bottom of the tank. The vertical dimensions of the pump chamber shown are based on the detail shown on the plans, and liquid levels are based on these dimensions, if a different size pump chamber is used, then the engineer should be contacted to adjust liquid level elevations.
3. A three float system or electronic level monitor is required which shall control: redundant pump-off, limit of normal and peak operation, and high water alarm.

Part 2 (10/01/2023

PUMPING and CONTROL
1. The effluent pump shall be a GOULDS Blaster 20EB05-3 stages, 0.5 horsepower, single phase electric motor, drawing 6.5 amps at 3,500 RPM or an approved equal.
2. The control panel shall be capable of these functions: a. timed dose b. pump cycle counter c. elapsed pump run time meter for each pump.
3. The controller system panel shall be capable of delivering timed doses as shown on the computation sheet:
   - the controller be capable of having at least two control points
     1) average: timed dose set between 5 to 8 minutes, and
     2) peak conditions: timed dose set between 10 and 15 minutes
   The controlled lose to be set initially to deliver a 6 minute dose at average condition and adjustable to handle peak conditions
   - average condition (6 minutes),
   - peak flow conditions (10 minutes).
   The installer/operator should adjust the dose time to meet actual flow conditions. The controller is to automatically initiate a "flush cycle" 4 to 5 cycles or 20 days whichever occurs sooner. The flush cycle counter to automatically reset after each flush cycle
4. Zone control and recirculation to be by the use of the GeoFlow Headwork model G-DFP-AN-200BD-1-2005V-1.

PIPE MATERIAL and INSTALLATION
1. Drip tubing: GeoFlow WaterflowECO model G-WFPC-17-2-24-ECO drip tubing Model 17 mm, 0.6 gph (pressure compensating emitters) 24" on-center. Solid (non-perforated) flexible connections are to be used for loops and connection of the drip tubing to the supply and return headers, and pipes connections to be with "spin lock" connector.
2. The drip tubing shall be installed using vibratory plow, see detail "Profile View Dripline Disposal Field."
3. The supply and return pipe manifolds to be schedule 40 PVC-use pressure type fittings, and sizes per the plans. Supply & return pipeing to be installed by standard trenching unless approved otherwise.

TESTING & INSPECTION & DELIVERY REQUIREMENTS
1. The Contractor is to notify the Health Department and MDE at various times as identified at the pre-construction meeting. For such testingand inspections as the 24-hour leak test and final start up.
2. After the system installation is complete, a Manufacturer qualified person shall perform start-up, regularly inspect and maintain the system to assure compliance with the Bay Restoration Fund requirements.
3. The proposed Best Available Technology (BAT) system shall include an operation and maintenance (O&M) manual, spare parts list, and supplier. Three copies of the O&M manual, guarantee, and service contract are to be furnish to the Owner at final inspection.
4. A test of the piping system and distribution network shall be required prior to backfilling or covering the system. The force main can be partially covered as long as all joints, elbows, tees, etc. are visible. The test will require sufficient water in site to activate the pump through several pumping cycles. Provisions to protect the pumping system and distribution network from erosion and sedimentation should be made by the contractor.

Tax Id 04-017757 & 04-013212

Alternative & Innovative
On-site Sewage Disposal System
Chaptico Market
25466 Maddox Road
Located in Chaptico, Maryland
Tax Map 0017, Bk. 0021, P. 0005 & 0091
4th Election District
St. Mary's Co., Maryland