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

ONSITE SEWAGE DISPOSAL SYSTEM PERMIT: CONSTRUCTION

RECEIPT DATE: 05/11/2021 APPROVAL DATE: 10/19/2021 (SV) P 569503 A 523040 (2005)

PROPERTY ADDRESS: 5629 Dosa Court, Clarksville, MD 20794

SUBDIVISION: The Woodlands LOT: 8 TAX ID: 05-601713

CONTRACTOR: Hatfields Equipment & Dedication Services Inc EMAIL:

CONTRACTOR ADDRESS: PO Box 519 Annapolis Junction, MD 20701 PHONE: (301) 490 - 4289

CONTRACTOR CERTIFIED FOR BAT INSTALLATION: ☒ MDE ☒ MANUFACTURER:

PROPERTY OWNER: Jose, Sanju; Jose, Belda B EMAIL:

OWNER ADDRESS: 5629 Dosa Court, Clarksville, MD 21029 PHONE:

BAT UNIT MODEL: Norweco TNTLP 750 PUMP SIZE: Goulds WS10BHF PUMP TANK CAPACITY: 2000

OPERATION & MAINTENANCE AGREEMENT DATE SIGNED: 11/20/2020 DATE RECORDED: 12/4/2020

DISTRIBUTION SYSTEM: ☐ GRAVITY ☒ PRESSURE DOSED BEDROOMS: 6 APPLICATION RATE:

TRENCHES:	LINEAR FEET REQUIRED:	380'	INLET DEPTH:	2'
	TRENCH WIDTH:	3'	MAXIMUM BOTTOM DEPTH:	5'
	MINIMUM SPACE BETWEEN TRENCHES:	10'	EFFECTIVE AREA BEGINNING DEPTH:	3.5'
LOCATION:	**PER APPROVED SITE PLAN. SEWAGE DISPOSAL AREA AND BAT UNIT LOCATION MUST BE STAKED BY LICENSED SURVEYOR PRIOR TO PRE-CONSTRUCTION INSPECTION.**			
NOTES:				

ISSUED BY: Cabahug 001997 ISSUE DATE: 05/11/2021 EXPIRATION DATE: 05/11/2022

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 21002908

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

SEE ATTACHED DIAGRAM

ROAD NAME

TRENCH/DRAINFIELD DATA

WIDTH	INLET	BOTTOM
3'	2'	5'

NUMBER OF TRENCHES 5
TOTAL LENGTH 180'
ABSORPTION AREA 540 sq ft sidewall
DISTRIBUTION BOX LEVEL N/A
DISTRIBUTION BOX BAFFLE N/A
DISTRIBUTION BOX PORT N/A

SEPTIC TANK DATA

SEPTIC TANK 1 LEVEL
MANUFACTURER Norwesco
CAPACITY 750 GAL
SEAM LOC top
TANK LID DEPTH 2'
BAFFLES N/A
BAFFLE FILTER –
MANHOLE LOC front, middle, back
6" PORT LOC –
WATERTIGHT TEST –
SLOTTED N/A
DATE ON LID 11-23-20

PUMP/SEPTIC TANK LEVEL
MANUFACTURER Babylon
CAPACITY 2000 GAL
SEAM LOC top
TANK LID DEPTH 3'
BAFFLES N/A
BAFFLE FILTER –
MANHOLE LOC inlet + outlet
6" PORT LOC –
WATERTIGHT TEST –
SLOTTED no
DATE ON LID 6-16-21

PRE-CONSTRUCTION:
05/17/2021 MID LATERAL WAS 18" OFF CONTOUR. LOOKS LIKE CLAY LAYER WAS TAKEN FROM SDA TO MAKE BERM. CONTACT ENGINEER. (JP)

07/16/2021 LAID OUT TRENCHES. LEVEL TRENCH BOTTOM FROM LOW SIDE; LEVEL INLET FROM HIGH SIDE. USE LAZER LEVEL. (JP)

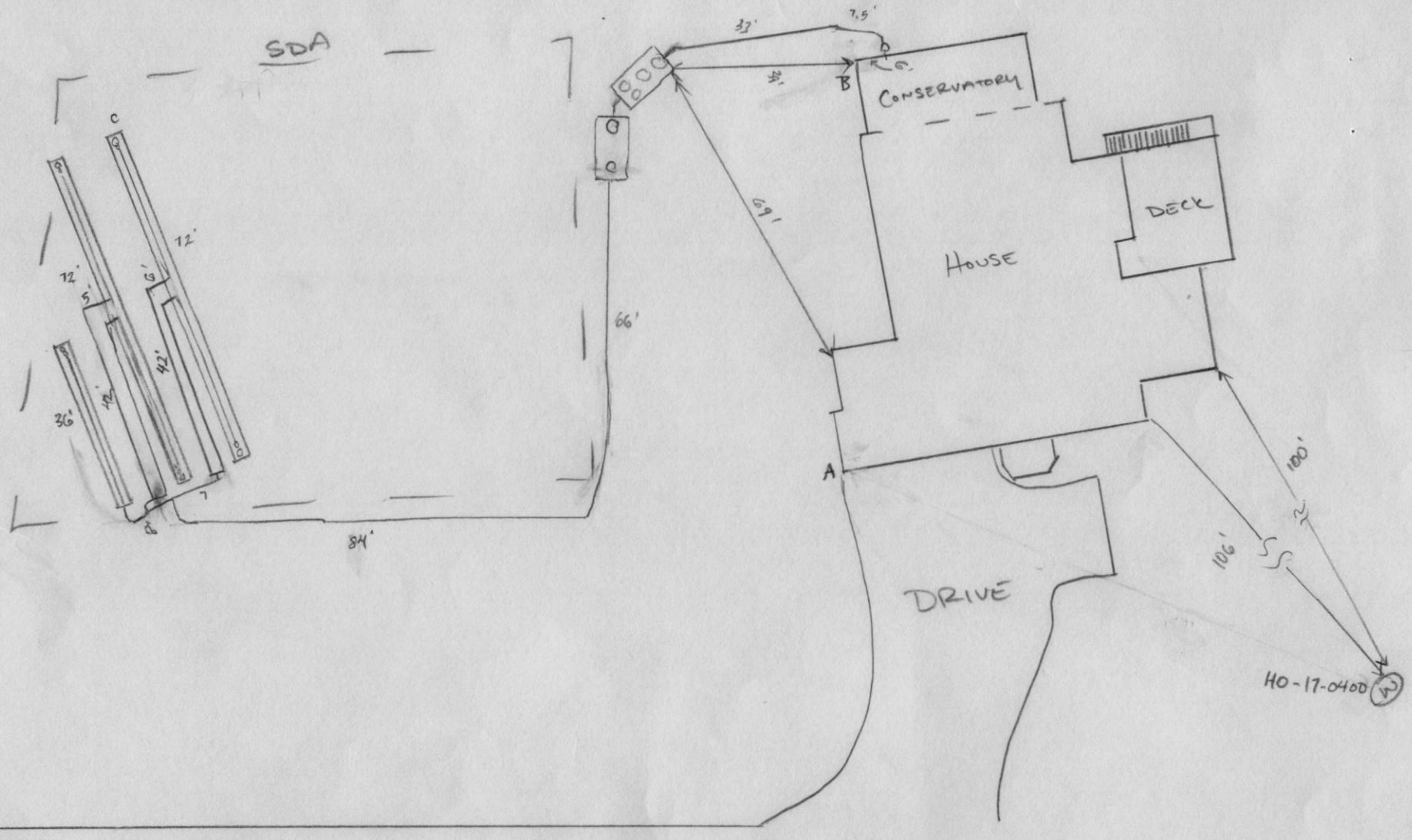
INSTALLATION: 8/6/21 Tanks set, SHC constructed, FM partially constructed. 5x36' trenches constructed with laterals with correct number of perforations, spaced according to plan. Re-insp for manifold. (ST) 8/9/21 Manifold complete (ST) 10/19/21 Pump, Alarm and BAT observed on seperate circuits in basement. Alarm observed to work, located next to tank. Pump observed to work, with expected head pressure at all laterals. (ST)

FINAL INSPECTOR Susan Thomas. DATE OF APPROVAL 10/19/21.

5629 DOSA COURT

AC = 165'
BC = 156'

NOT TO SCALE



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HOWARD COUNTY HEALTH DEPARTMENT

Bureau of Environmental Health
8930 Stanford Blvd | Columbia, MD 21045
410.313.2640 - Voice/Relay
410.313.2648 - Fax
1.866.313.6300 - Toll Free

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

OPERATION AND MAINTENANCE AGREEMENT FOR AN ON-SITE SEWAGE DISPOSAL SYSTEM HAVING AN ADVANCED PRE-TREATMENT SYSTEM

THIS AGREEMENT is made this 28th day of October, among Williamsburg Group L.L.C., hereinafter collectively referred to as "Owner", and the Howard County Health Department hereinafter referred to as the "County".

WHEREAS, Owner is the owner or contract owner of a parcel of land located at 5629 DOSA CT, Clarksville, MD 20129, in the 05 Election District of Howard County, Maryland, and the deed and subdivision plat of the property is recorded among the Land Records of Howard County, Maryland, Tax Map # 0034, Block # _____, Parcel # 0015, Deed Reference # _____ and Tax Account # 601713 ("the Property").

WHEREAS, The Property is suitable for the installation of a conventional on-site sewage disposal system with an advanced pre-treatment system, utilizing best available technology to perform nitrogen reduction, in accordance with the Code of Maryland Regulations 26.04.02.07, effective November 24, 2016. The pre-treatment device being installed is Norweco Singulair TNTLP GPM 750.

NOW, THEREFORE, the parties hereto agree as follows:

A. Owner hereby grants to the County the right to enter upon the Property at any reasonable time with prior notice for access to the system to make periodic inspections and the Owner agrees to provide any information and data in Owner's possession reasonably requested and needed by the County.

20
YO
SB

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

C. The Owner will devote reasonable care and effort to the operation and maintenance of the system in perpetuity or until a public sewer connection is made so that a system malfunction is not the result of poor maintenance, faulty operation, or neglect.

D. The Owner agrees to enter into a contract reasonably acceptable to the Owner and the County with a private entity to operate and maintain on a regularly scheduled basis an approved advanced pre-treatment system. The owner shall supply a copy of the contract to the County when it is renewed or altered.

E. This agreement shall run with the land and upon Owner's taking title to the Property shall bind the Owner, their heirs, successors, and assigns to the provisions of the agreement as long as

LR Agreement 20.00
Recording Fee 40.00
Name: Williamsburg
Ground Rent
Ref:
LR - Agreement
Surcharge 60.00
Sub Total: 60.00
Total: 60.00
12/10/2020 01:
#143
Howard
CC0502
Columbia, CC05 - 05 04 -
Register 04

the property is in existence and after installation of the system. Owner further agrees that they shall inform in writing any subsequent purchaser or lessee of the Property that the system shall require maintenance or other attention. Upon taking title to the Property, the Owner agrees to cause this agreement to be recorded in the Land Records of Howard County and assure that it becomes part of the Deed for the subject property in order that prospective buyers may be aware of the special conditions affecting this property.

F. This agreement shall not be construed to limit any authority of the County 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.

G. This agreement may be voided at any time at the discretion of the County.

H. This agreement contains the entire agreement and understanding between the County and the Owner. 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.

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

J. Owner acknowledges and agrees that interior renovations to increase the number of bedrooms or an increase in living space shall not be permitted without approval from the County.

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

Richard J. Dove 11/20/20
Howard County Health Department

Bruce A. Harvey 10/28/20
Owner #1 Signature Date

Bruce A. Harvey - President, Williamsburg Group L.L.C.
Owner #1 Print Name

Owner#2 Signature Date

Owner #2 Print Name

11/10/20
Buyer #1 Signature Date

Belda Jose 11/10/20
Buyer #2 Signature Date

Sanju Jose
Buyer #1 Print Name

Belda Jose
Buyer #2 Print Name

BACK RIVER PRE-CAST, LLC
PO BOX 329
GLYNDON, MD 21071
PH# 410-833-3394

NORWECO CERTIFICATION

PROPERTY OWNER: WILLIAMSBURG GROUP, LLC	INSTALLATION COMPANY: HATFIELD'S
ADDRESS: 5629 DOSA CT.	CERTIFIED INSTALLER: TODD TRACY
CITY, ZIPCODE & COUNTY: CLARKSVILLE, 21029, HOWARD	PERMIT#
SIZE OF SYSTEM INSTALLED:	DATE INSTALLED: 08-05-21
750 GPD CONCRETE	START-UP DATE: 10-19-21
NUMBER OF BEDROOMS:	DATE OF FINAL INSPECTION:
TYPE OF INSTALLATION: NEW	DATE OF ELECTRICAL INSPECTION:
ELECTRICAL WIRING PER ELECTRICAL INSTRUCTIONS: YES	TANK LEVEL: YES
HT. OF CONTROL PANEL ABOVE FINAL GRADE: 36"	BURIAL DEPTH OF TANK: 34"
SYSTEM WIRED ON A 15-AMP DEDICATED CIRCUIT WITH STD. BREAKER: YES	RISERS 4" - 6" ABOVE GRADE: YES
LENGTH(S) OF UF WIRE PAST LAST AERATION RISER(S): 60"	VENTED LID(S) ON AERATION CHAMBER(S): YES
FEMALE PLUG(S) WIRED TO UF WIRE: YES	ANY GROUND SETTLING AROUND TANK:
CONDUIT(S) ENTERING AERATION RISER MADE WITH A WATERTIGHT CONNECTION: YES	NO
ISTHE INSIDE OF THE CONDUIT ENTERING THE CONTROL PANEL(S) AND AERATION RISER(S) SEALED WITH DUCT SEAL: YES	

ON 2ND PAGE MAKE A ROUGH SKETCH OF THE HOUSE ,WHERE THE SYSTEM IS LOCATED, WHERE THE CONTROL PANEL IS LOCATED , WHERE THE FRONT OF THE IS AND DIRECTIONS TO THE PROPERTY.

DIRECTIONS CAN START A FEW STREETS AWAY

EXAMPLE: RT. X LEFT ONTO XX STREET RIGHT ONTO PRIVATE DRIVEWAY 5TH HOUSE OF THE LEFT.

I certify that the Norweco Singulair TNT Wastewater Treatment System was installed according to the manufacture's specifications.

Matthew Geckle — Oct 19, 2021

Signature of BRP Representative — Vice-President — Date

16005 Frederick Road, 2nd Floor
Woodbine, MD 21797
Website: www.sillengineering.com
Office: 443-325-5076
Fax: 410-696-2022
Email: info@sillengineering.com
Civil Engineering for Land Development

SILL ENGINEERING GROUP, LLC

The Woodlands
Lot 8
5629 Dosa Court

Low Pressure Dosing System Report

October 5, 2020

Prepared For:

Williamsburg Group
5485 Harpers Farm Road
Columbia, Md 21044

Professional Certification: 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. 32025,
Expiration Date: June 20, 2021

Project #20-003

The Woodlands, Lot 8
5624 Dosa Court
August 03, 2020
Revised September 03, 2020

Pressure Network Design

- Design Flow: 900 gpd
- Diameter of force main = 3.0"
- Diameter of manifold = 3.0"
- Diameter of lateral = 1.5"
- Material: Schedule 40 PVC

Septic System Trench Design Specifications

Initial System:

- Design Flow:
  - 6 Bedrooms at 150 gpd
    - 6 x150 gpd = 900 gpd
- Application Rate: 1.2
  - Effective Area Beginning Depth: 3.5'
  - Bottom Maximum Depth: 5.0'
- Square Footage of Drain Field Required:
  - Design Flow (900 gpd) / Application Rate (1.2) = 750 sf
- Sidewall Reduction Credit:
  - Trench Width (W) = 3'
  - Trench Effective Depth (D) = 1.5'
  - (W+2) / (W+1+2D) x 100 = 71%
- Linear Length of Trench Required:

$$\frac{\text{Drain Field Square Footage (750.0) x Sidewall Reduction Credit (0.71)}}{\text{Trench Width (3')}}$$

Liner Length of Trench Required = 177.50'

- Linear Length of Trench Provided = 180.0'
  -Five trenches at 36.0 lf each

Pumping System Design

***Calculations are based on the path to Initial system I-5**

- Dose Calculations:
  - Design Flow: 900 gpd
  - Volume of 3.0" pipe: 38.4 gallons per 100'
  - Volume of 1.5" pipe: 10.6 gallons per 100'

    Dose to be the larger of:
    - $1/6^{th}$ the design flow: 1/6 x 900 gallons = 150.0 gallons

    OR
    - Volume of Force Main + Volume of Manifold + 5x Volume of the Laterals:

      47.12 gallons + 4.83 gallons + 8.88 gallons x 5 = 96.35 gallons
  - Minimum Dose = 150 gallons

The Woodlands, Lot 8
5624 Dosa Court
August 03, 2020
Revised September 03, 2020

- Pump Design:
  - Pump flow required: 87.01 gpm: Use 88 gpm (see Pressure Distribution table for initial system)
  - Dose amount: 150 gallons
  - Pump run time: 1.70 minutes
  - Static head to I-1: 18.48'

- Pipe Lengths to I-5:
  - 3.0" Force Main: 122.7'
  - 3.0" Manifold: 12.57'
    - 3.0" @ Zone 1 Manifold: 10.19'
    - 3.0" @ Zone 2 Manifold: 2.38'
  - 1.5" Lateral: 83.75'

- Friction head calculation (Table 4.3):

Pipe	3.0" Force Main	3.0" Manifold	1.5" Lateral
1/4 Bend (90°)	3 @ 10.0' = 30.0	2 @ 10.0' = 20.0'	-
1/8 Bend (45°)	3 @ 6.0' = 18.0'	-	-
1/16 Bend (22.5°)	1 @ 3.0'=3.0'	-	-
1/32 Bend (11.25°)	-	-	-
Gate Valve	-	-	-
Standard Tee		2 @ 15.0'=30.0'	-
Run Tee	-	-	-
Cross		-	-
Reducer	-	-	1 - 1.5"x3.0" @ 1.0' = 1.0'
Couplings	10 @ 3.0'=30.0'	-	7 @ 1.5' = 4.5'
Quick Connect/Disconnect	1 @ 4.5'= 4.5'	-	-
Total Equivalent Length of pipe	85.5'	50.0'	11.5'

- Flow at 3.0" pipe (force main) = 92 gpm
  - Friction loss per 100' (Table 4.4) of 3.0" schedule 40 plastic pipe: 1.80
  - Total equivalent length of 3.0" FM and appurtenances =
    122.7' + 85.5' = 208.2/100 = 2.08 x 1.80 = 3.74'

- Flow at 3.0" pipe (manifold) = 46 gpm
  - Friction loss per 100' (Table 4.4) of 3.0" schedule 40 plastic pipe: 0.50
  - Total equivalent length of 3.0" FM and appurtenances =
    10.19'+ 50.0' = 60.19/100 = 0.6019 x 0.50 = 0.30'

- Flow at 3.0" pipe (manifold) = 23 gpm
  - Friction loss per 100' (Table 4.4) of 3.0" schedule 40 plastic pipe: 0.15

- Total equivalent length of 3.0" FM and appurtenances =
  2.38'+ 50.0' = 52.38/100 = 0.5238 x 0.15 = 0.08'

- Flow at 1.5" pipe (lateral) = 23 gpm
  - Friction loss per 100' (Table 4.4) of 1.5" schedule 40 plastic pipe: 3.23
  - Total equivalent length of 1.5" FM and appurtenances =
    83.75'+ 11.5' = 95.25/100 = 0.9525 x 3.23 = 3.08'

- Total Friction Head = 3.74' + .30' + .08' + 3.08' = 7.2'

- Total Dynamic Head = Static head + Distal Head + Friction head + Lateral friction head safety factor =
  18.48' + 2.5' + 7.2' + 1.5' = 29.68'
  Use 30'

- Pump Chamber Design:
  - For pump tank dimensions and detail, see plans.
  - Cross sectional area of tank: 46.1736 cf per one vertical foot
  - Pump chamber elevations:
    Proposed grade at top of tank (at inlet): 436.5
    Top of pump tank (interior): 432.64
    Pump chamber invert in: 432.07
    High Water Alarm: 429.66
    Pump On: 429.16
    Pump Off: 428.80
    Bottom inside slab of tank: 426.72
  - Pump Chamber volumes:
    Invert In to High Water Alarm: 111.2784 cf or 832.4 gallons
    Pump On to Pump Off: 16.6225 cf or 124.3 gallons
    Excess volume above Pump On: 176.0754 cf or 1317.1 gallons
  - Design based on:
    - Goulds WS10BHF series pump or equivalent
    - Berg Vaults 1750-gallon septic tank or equivalent

PRESSURE DISTRIBUTION ON SLOPING SITES

The Woodlaands, LOT 8 - Pressure System

SEWAGE DISPOSAL AREA LATERAL SIZING SUMMARY												
Lateral No.	Prop. Grd Elev. (ft)	Invert Elev. (ft)	Trench Bottom Elev. (ft)	Lateral Length (ft)	Lateral Length (in)	Head (ft)	Orifice Diameter (in)	Orifice Flow Rate (gpm)	Orifice Spacing (in)	Number of Orifices	Trench Flow Rate (gpm)	Zone
I1	447.70	445.7	442.70	34.125	410	2.0	5/16	1.63	39	11	17.93	1
I2	445.49	443.5	440.49	34.125	410	4.2	1/4	1.51	39	11	16.61	
I3	445.49	443.5	440.49	34.125	410	4.2	1/4	1.51	39	11	16.61	
I4	443.70	441.7	438.70	34.125	410	2.0	5/16	1.63	39	11	17.93	2
I5	443.70	441.7	438.70	34.125	410	2.0	5/16	1.63	39	11	17.93	
											87.01	TOTALS
										Use	**88.00 gpm**	

Trench I1
Trench Length = 36
Effective area beginning depth = 3.5
Trench depth = 5

Trench I2
Trench Length = 36
Effective area beginning depth = 3.5
Trench depth = 5

Trench I3
Trench Length = 36
Effective area beginning depth = 3.5
Trench depth = 5

Trench I4
Trench Length = 36
Effective area beginning depth = 3.5
Trench depth = 5

Trench I5
Trench Length = 36
Effective area beginning depth = 3.5
Trench depth = 5

xylem
Let's Solve Water

TECHNICAL BROCHURE
B3887BHF R4

WS_BHF Series

Model 3887BHF

SUBMERSIBLE SEWAGE PUMP

BUILT IN THE USA
ENGINEERED, ASSEMBLED & TESTED

GOULDS WATER TECHNOLOGY
a xylem brand

FEATURES

Impeller: Cast iron, enclosed, non-clog, dynamically balanced with pump out vanes for mechanical seal protection.

Casing: Cast iron flanged volute type for maximum efficiency. Designed for easy installation on A10-20 slide rail or base elbow rail systems.

Mechanical Seal: SILICON CARBIDE VS. SILICON CARBIDE sealing faces for superior abrasive resistance, stainless steel metal parts, BUNA-N elastomers.

Shaft: Corrosion-resistant, 300 series stainless steel. Threaded design. Locknut on all models to guard against component damage on accidental reverse rotation.

Fasteners: 300 series stainless steel.

Capable of running dry without damage to components.

Designed for continuous operation when fully submerged.

EXTENDED WARRANTY AVAILABLE FOR RESIDENTIAL APPLICATIONS.

APPLICATIONS

Specifically designed for the following uses:

- Homes
- Water transfer
- Sewage systems
- Light industrial
- Dewatering/Effluent
- Commercial applications

Anywhere waste or drainage must be disposed of quickly, quietly and efficiently.

SPECIFICATIONS

Pump

- Solids handling capabilities: 2" maximum
- Capacities: up to 220 GPM
- Total heads: up to 81 feet TDH
- Discharge size: 2" NPT threaded companion flange as standard. 3" option available but must be ordered separately. (Order no. A1-3)
- Temperature: 104°F (40°C) continuous
  140°F (60°C) intermittent.

MOTORS

- Fully submerged in high grade turbine oil for lubrication and efficient heat transfer. All ratings are within the working limits of the motor.

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.

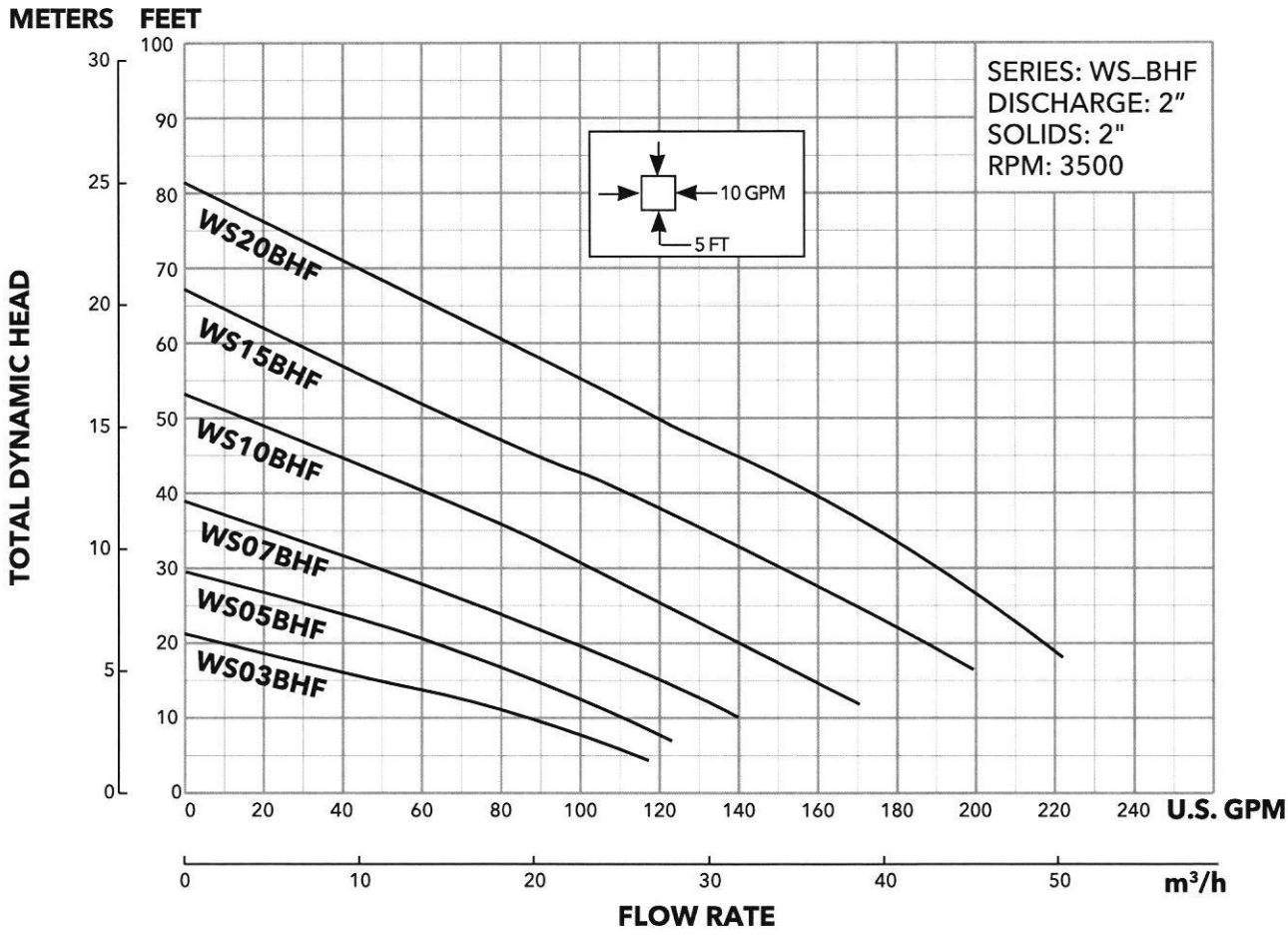
Three phase (60 Hz):

- Class 10 overload protection must be provided in separately ordered starter unit.
- STOW power cords all have bare lead cord ends.

- Bearings: Upper and lower heavy duty ball bearing construction.
- Designed for Continuous Operation: Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage when fully submerged.
- 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.
- Motor Cover O-ring: Assures positive sealing against contaminants and oil leakage.

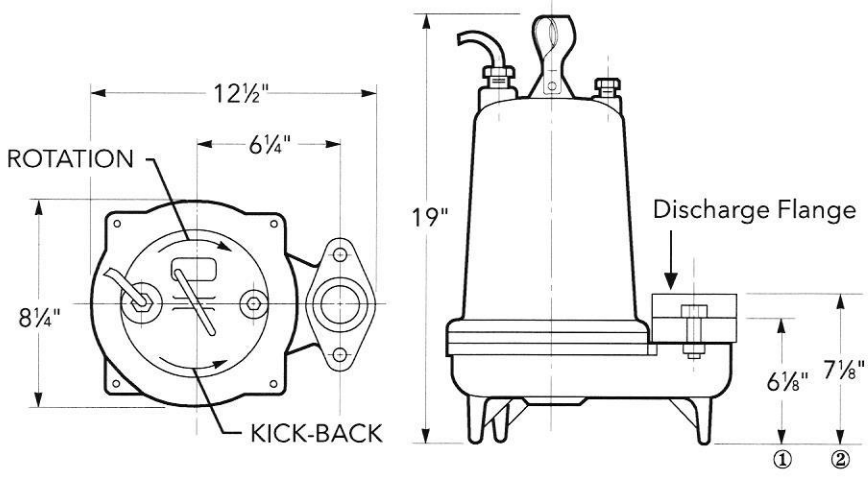
AGENCY LISTINGS

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



DIMENSIONS

(All dimensions are in inches. Do not use for construction purposes.)



Discharge Flange:

① 2" NPT standard

② 3" NPT optional (order an A1-3)

MOTOR AND MODEL INFORMATION

Order Number	HP	Phase	Volts	RPM	Impeller Diameter (in.)	Maximum Amps	Locked Rotor Amps	KVA Code	Full Load Motor Efficiency %	Resistance	
										Start	Line-Line
WS0311BHF	0.33	1	115	3500	2.94	12.4	46.0	M	54	7.5	1.0
WS0318BHF			208			6.8	31.0	K	68	9.7	2.4
WS0312BHF			230			6.2	34.5	M	53	9.6	4.0
WS0511BHF	0.5		115		3.19	14.5	46.0	M	54	7.5	1.0
WS0518BHF			208			8.4	31.0	K	68	9.7	2.4
WS0512BHF			230			7.6	34.5	M	53	9.6	4.0
WS0538BHF		3	200			4.9	22.6	R	68	-	3.8
WS0532BHF			230			3.6	18.8	R	70	-	5.8
WS0534BHF			460			1.8	9.4	R	70	-	23.2
WS0537BHF			575			1.5	7.5	R	62	-	35.3
WS0718BHF	0.75	1	208		3.44	11.0	31.0	K	68	9.7	2.4
WS0712BHF			230			10.0	27.5	J	65	12.2	2.7
WS0738BHF		3	200			6.2	20.6	L	64	-	5.7
WS0732BHF			230			5.4	15.7	K	68	-	8.6
WS0734BHF			460			2.7	7.9	K	68	-	11
WS0737BHF			575			2.2	9.9	L	78	-	26.5
WS1018BHF	1	1 1	208		3.75	14.5	59.0	K	68	9.3	1.1
WS1012BHF			230			13.0	36.2	J	69	10.3	2.1
WS1038BHF		3	200			8.6	27.6	M	77	-	2.7
WS1032BHF			230			7.5	24.1	L	79	-	4.1
WS1034BHF			460			3.8	12.1	L	79	-	16.2
WS1037BHF			575			3.1	9.9	L	78	-	26.5
WS1512BHF	1.5	1	230		4.00	18.0	52.0	J	67	2.76	0.53
WS1538BHF		3	200			10.0	42.4	K	78	-	1.7
WS1532BHF			230			9.6	42.4	K	78	-	1.7
WS1534BHF			460			4.8	21.2	K	78	-	6.6
WS1537BHF			575			3.9	16.3	L	78	-	10.5
WS2012BHF	2	1	230		4.44	18.0	49.6	F	78	3.2	1.1
WS2038BHF		3	200			12.0	42.4	K	78	-	1.7
WS2032BHF			230			11.6	42.4	K	78	-	1.7
WS2034BHF			460			5.8	21.2	K	78	-	6.6
WS2037BHF			575			4.7	16.3	L	78	-	10.5

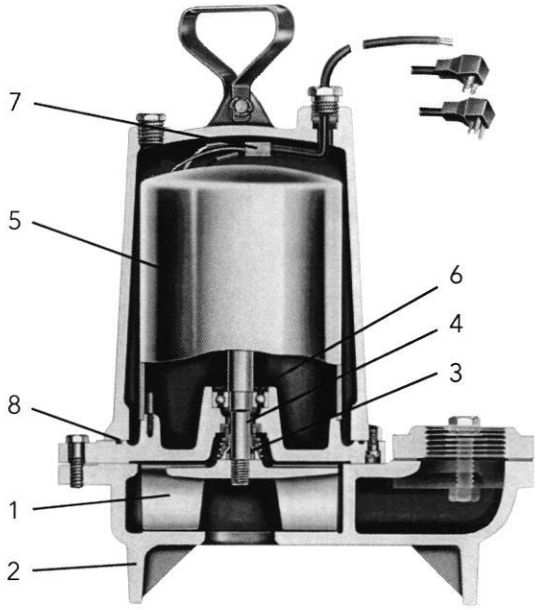
PERFORMANCE RATINGS (gallons per minute)

Order No.		WS03-BHF	WS05-BHF	WS07-BHF	WS10-BHF	WS15-BHF	WS20-BHF
Total Head Feet of Water	HP	⅓	½	¾	1	1½	2
	RPM	3500	3500	3500	3500	3500	3500
	10	86	110	140	-	-	-
	15	48	88	120	158	-	-
	20	-	62	98	139	186	217
	25	-	32	74	120	170	204
	30	-	-	49	101	150	190
	35	-	-	21	82	130	175
	40	-	-	-	60	110	159
	45	-	-	-	38	88	140
	50	-	-	-	-	67	120
	55	-	-	-	-	47	100
	60	-	-	-	-	29	80
	65	-	-	-	-	-	62
	70	-	-	-	-	-	43
	75	-	-	-	-	-	23

COMPONENTS *(for reference only)*

Item No.	Description
1	Impeller
2	Casing
3	Mechanical Seal
4	Motor Shaft
5	Motor
6	Ball Bearings
7	Power Cable
8	Casing O-Ring

**** For repair parts, reference repair parts book.***



STANDARD PANEL OPTIONS

Pump Order Number	K Series		Boulay Series	
	Simplex	Duplex	Simplex	Duplex
WS0311BHF	KS19020WF	KD19020WF	S10020	D10020
WS0318BHF	KS19020WF	KD19020WF	S10020	D10020
WS0312BHF	KS19020WF	KD19020WF	S10020	D10020
WS0511BHF	KS19020WF	KD19020WF	S10020	D10020
WS0518BHF	KS19020WF	KD19020WF	S10020	D10020
WS0512BHF	KS19020WF	KD19020WF	S10020	D10020
WS0538BHF	KS34518WF	KD34518WF	S34063	D34063
WS0532BHF	KS31255WF	KD31255WF	S32540	D32540
WS0534BHF	KS31255WF	KD31255WF	S31625	D31625
WS0537BHF	N/A	N/A	S31625	D31625
WS0718BHF	KS19020WF	KD19020WF	S10020	D10020
WS0712BHF	KS19020WF	KD19020WF	S10020	D10020
WS0738BHF	KS34518WF	KD34518WF	S34063	D34063
WS0732BHF	KS34518WF	KD34518WF	S34063	D34063
WS0734BHF	KS31255WF	KD31255WF	S32540	D32540
WS0734BHF	KS31255WF	KD31255WF	S31625	D31625
WS1018BHF	KS19020WF	KD19020WF	S10020	D10020
WS1012BHF	KS19020WF	KD19020WF	S10020	D10020
WS1038BHF	KS34518WF	KD34518WF	S36310	D36310
WS1032BHF	KS34518WF	KD34518WF	S36310	D36310
WS1034BHF	KS31255WF	KD31255WF	S32540	D32540
WS1037BHF	N/A	N/A	S32540	D32540
WS1512BHF	KS19020WF	KD19020WF	S10020	D10020
WS1538BHF	KS34518WF	KD34518WF	S31016	D31016
WS1532BHF	KS34518WF	KD34518WF	S36310	D36310
WS1534BHF	KS31255WF	KD31255WF	S34063	D34063
WS1537BHF	N/A	N/A	S32540	D32540
WS2012BHF	KS19020WF	KD19020WF	S10020	D10020
WS2038BHF	KS34518WF	KD34518WF	S31016	D31016
WS2032BHF	KS34518WF	KD34518WF	S31016	D31016
WS2034BHF	KS34518WF	KD34518WF	S34063	D34063
WS2037BHF	N/A	N/A	S34063	D34063

Note: Boulay Series part numbers have additional available features, see page 7 for more information.

Note: K Series panel part numbers include floats, to order without float switches, remove the 'WF' suffix. Boulay Series panels do not include float switches.

K-SERIES

- NEMA 4X dead front outdoor rated enclosure
- Red LED alarm beacon
- HOA selector switch
- Field wiring terminal block
- Single phase models handle 120, 208 and 230V service
- Three phase models handle 200, 230 and 460V service
- Requires separate control/alarm power feed
- See brochure "BCPKSDPANELS" for additional information

BOULAY SERIES

- NEMA 4X outdoor rated enclosure
- Red alarm beacon
- HOA selector switch
- Through door pump run light(s)
- Through door alarm test and horn silence button
- Single phase models handle 120, 208 and 230V service
- Three phase models handle 200, 230, 460 and 575V service
- Accepts single or dual power feed
- See brochure "BCP3 R11" for additional information on simplex models
- See brochure "BCP4 R14" for additional information on duplex models

Xylem |'zīləm|

1) The tissue in plants that brings water upward from the roots;
2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xyleminc.com

xylem
Let's Solve Water

Xylem Inc.
2881 East Bayard Street Ext., Suite A
Seneca Falls, NY 13148
Phone: (866) 325-4210
Fax: (888) 322-5877
www.xylem.com/goulds

GENERAL NOTES

1. SUBJECT PROPERTY ZONED RC-DEO PER 10/06/13 COMPREHENSIVE ZONING PLAN.
2. PROPERTY ADDRESS: 5629 DOSA COURT, CLARKSVILLE 21029
3. TOTAL AREA OF PROPERTY = 1.33 AC.±
4. PRIVATE WATER AND PRIVATE SEWER WILL BE USED WITHIN THIS SITE.
5. ▨ THIS AREA DESIGNATES A PRIVATE SEWAGE AREA OF AT LEAST 10,000 SF AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL (COMAR 26.04.03). IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THESE AREAS SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE AREA. RECORDATION OF A MODIFIED SEWAGE AREA SHALL NOT BE NECESSARY.
6. THE BOUNDARY SHOWN HEREON IS BASED ON A FIELD RUN BOUNDARY SURVEY PREPARED BY ADCOCK & ASSOCIATES, LLC ON SEPTEMBER 16, 2014.
7. THE TOPOGRAPHY SHOWN HEREON HAS BEEN FIELD RUN BY ADCOCK & ASSOCIATES, LLC. ON SEPTEMBER 16, 2014. THE EXISTING TOPOGRAPHY SHOWN OUTSIDE THE SITE IS BASED ON HOWARD COUNTY AERIAL TOPOGRAPHY FLOWN IN 2004.
8. REFERENCE: RECORD PLAT NO. 25051.
9. PREVIOUS HOWARD COUNTY FILE NUMBERS: RECORD PLAT NO. 5471, F-83-114, ECP-15-032, WP-16-017, WP-17-060, SP-16-008, PB 431, WP-18-127, RECORD PLAT NO. 25051, F-18-094.
10. THE SOILS SHOWN HAVE BEEN TAKEN FROM THE US DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, WEB SOIL SURVEY WEBSITE, HOWARD COUNTY SOILS GRID 12, SUB-GRID 205.
11. A WETLAND AND STREAM STUDY HAS BEEN PREPARED BY ECO SCIENCE PROFESSIONALS INC. IN NOVEMBER 2014.
12. THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP, WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT.
13. ALL EXISTING WELLS, SEPTIC SYSTEMS AND SEWAGE DISPOSAL AREAS WITHIN 100 FEET OF THE PROPERTY BOUNDARIES AND ALL EXISTING AND PROPOSED WELLS THAT ARE LOCATED WITHIN 200 FEET DOWN-GRADIENT OF EXISTING OR PROPOSED SEPTIC SYSTEMS AND SEWAGE DISPOSAL AREAS HAVE BEEN FIELD LOCATED.
14. THE WELL (#HO-17-0400) HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.
15. EXISTING UTILITIES ARE LOCATED BY THE USE OF ANY OR ALL OF THE FOLLOWING: ROAD CONSTRUCTION PLANS, FIELD SURVEYS, PUBLIC WATER AND SEWER PLANS AND OTHER AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF THE EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTORS INFORMATION. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
16. GEOTECHNICAL INFORMATION HAS BEEN TAKEN FROM THE US DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, WEB SOIL SURVEY WEBSITE AND FIELD INVESTIGATIONS.
17. STORMWATER MANAGEMENT OBLIGATIONS FOR THIS SITE WILL BE MET BY FOUR DRYWELLS (M-5) AND SHEET FLOW TO CONSERVATION AREA CREDIT (N-3).
18. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED ON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENTS NUMBERS 28HC AND 34BA WERE USED FOR THIS PROJECT.
19. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS, OR THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS, UNLESS ALTERNATIVE COMPLIANCE HAVE BEEN APPROVED OR ACTIVITIES HAVE BEEN DETERMINED ESSENTIAL BY THE DEPARTMENT OF PLANNING AND ZONING.
20. THERE ARE NO HISTORIC STRUCTURES OR CEMETERIES WITHIN THE PROJECT BOUNDARY.
21. FOREST CONSERVATION OBLIGATIONS HAVE BEEN FULFILLED UNDER F-18-019.
22. ANY VEGETATION WITHIN AND NEAR TO WELL ZONES OR SEWAGE DISPOSAL AREAS POTENTIALLY COULD BE DAMAGED OR DESTROYED DURING INSTALLATION OF WELLS OR SEPTIC SYSTEMS. ALL SPECIMEN TREES WITHIN OR NEAR SDA OR WELL ZONES HAVE BEEN DESIGNATED FOR REMOVAL AND APPROVED FOR REMOVAL UNDER SP-16-008 AND WP-17-060.
23. DRIVEWAY(S) SHALL BE PROVIDED PRIOR TO ISSUANCE OF AN USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS TO ENSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING REQUIREMENTS:
    - WIDTH - 12 FEET (16 FEET SERVING MORE THAN ON RESIDENCE)
    - SURFACE - SIX (6") INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1/2" MINIMUM)
    - GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND 45-FOOT TURNING RADIUS
    - STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25-LOADING)
    - DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE
    - MAINTENANCE - SUFFICIENT TO ENSURE ALL WEATHER USE
    - DRIVEWAY ENTRANCES TO BE PER HOWARD COUNTY STANDARD DETAIL R-6.05 FOR DRIVEWAY LOTS, 1, 2, AND THE USE IN COMMON DRIVEWAY FOR LOTS 3, 4, 5, 6, 7 AND 8, AND BUILDABLE PRESERVATION PARCEL A.

SOILS LEGEND

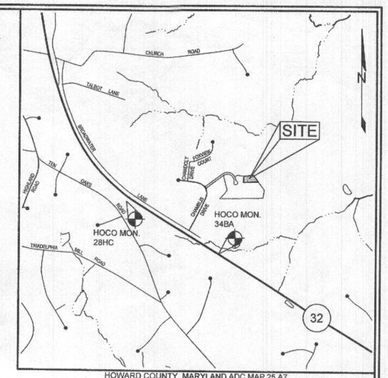
SYMBOL	NAME / DESCRIPTION	GROUP	'K' FACTOR
GaC	GAILA LOAM, 8 TO 15 PERCENT SLOPES	B	0.24
GgB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	0.20
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	0.37
MaC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	0.24
MaD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	0.24
WhB	WILTSHIRE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	0.24

NOTES:
1) SOIL INFORMATION HAS BEEN TAKEN FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE; NATURAL RESOURCES CONSERVATION SERVICE; WEB SOIL SURVEY, SOILS GRID 12, SUB-GRID 205.
2) HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR 'K' GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

LEGEND

EXISTING CONTOUR 462
PROPOSED CONTOUR 382
EXISTING SPOT ELEVATION 392.3
PROPOSED SPOT ELEVATION +82.53
DIRECTION OF FLOW
EXISTING TREELINE
SOIL BOUNDARY
EXISTING SPECIMEN TREE APPROVED FOR REMOVAL IF NECESSARY ST#43
EXISTING WELL W
FUTURE WELL LOCATION FW
WALK OUT BASEMENT WOB
PERCOLATION TEST HOLE, FAILED XXX
PERCOLATION TEST HOLE, PASSED XXX

N 566,150
E 1,325,750



HOWARD COUNTY, MARYLAND ADC MAP 25 A7

VICINITY MAP

SCALE: 1"=2000'

BENCHMARKS

NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
28HC	565,351.762	1,332,102.463	552.207	S SIDE OF ROUTE 32, 0.7 MILES W OF EXIT 20 SIGN, +/- 320' E OF GUARD RAIL
34BA	563,862.491	1,324,672.167	450.048	2.5' N OF EDGE OF PAVEMENT OF ROUTE 32, 13.3' SE OF EXIT 20 SIGN

SHEET INDEX

SHEET NO.	DESCRIPTION
1	SITE PLAN FOR BAT INSTALLATION
2	LOW PRESSURE DOSING SYSTEM PLAN AND PROFILE

SEPTIC SYSTEM TRENCH DESIGN SPECIFICATIONS

- INITIAL SYSTEM SYSTEM:
  - APPLICATION RATE: 1.2
  - EFFECTIVE AREA BEGINNING DEPTH: 3.5'
  - BOTTOM MAXIMUM DEPTH: 5'

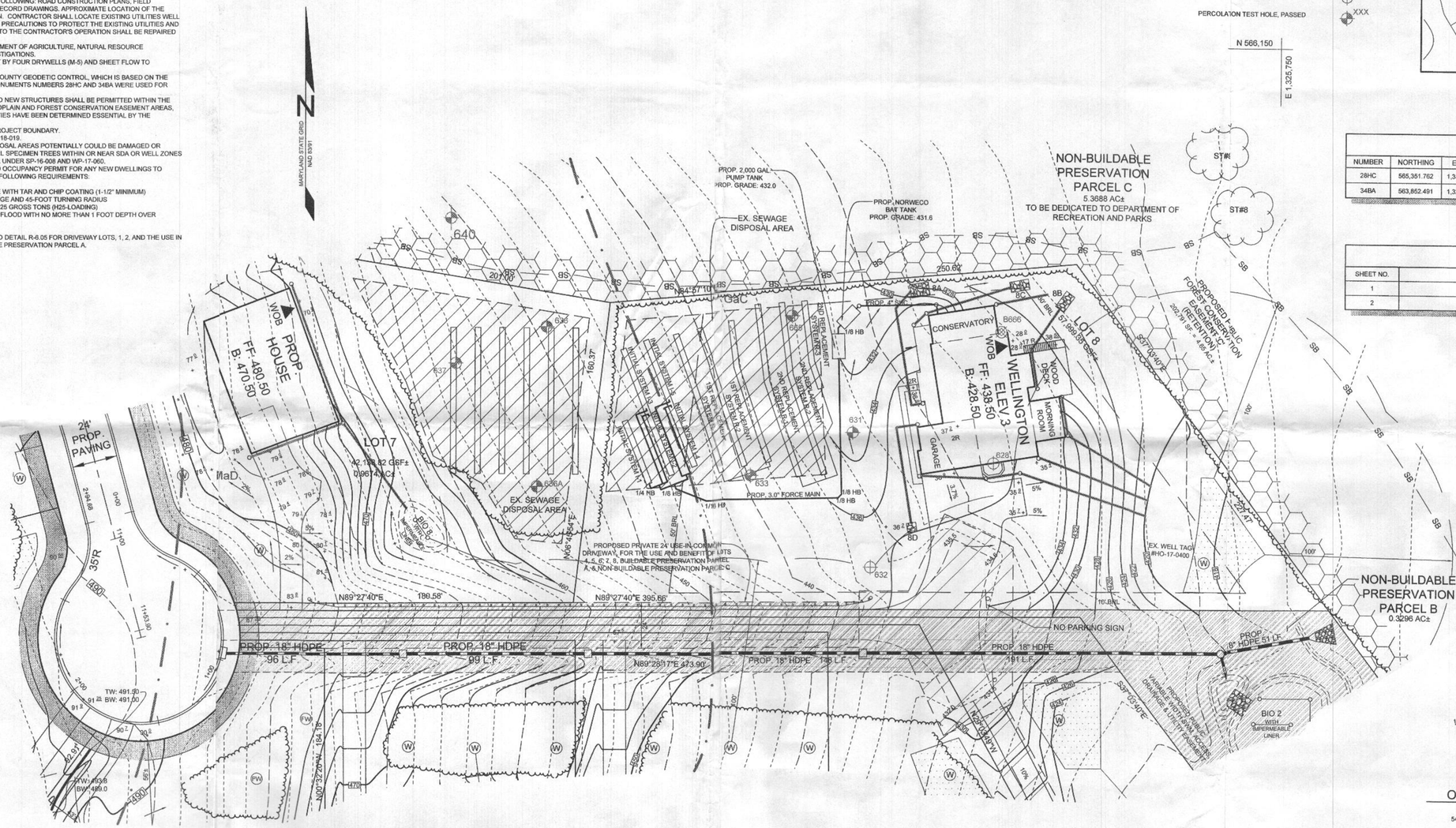
1. DESIGN FLOW:
   - 6 BEDROOMS AT 150 GPD
   - 6x150 GPD = 900 GPD
2. SQUARE FOOTAGE OF DRAIN FIELD REQUIRED:
   - DESIGN FLOW (900 GPD) / APPLICATION RATE (1.2) = 750 SF
3. SIDEWALL REDUCTION CREDIT:
   - TRENCH WIDTH (W) = 3.0'
   - TRENCH EFFECTIVE DEPTH (D) = 1.5'
   - (W+2) / (W+1+2D) X 100 = 71%
4. LINEAR LENGTH OF TRENCH REQUIRED:
   - DRAIN FIELD SQUARE FOOTAGE (750) X SIDEWALL REDUCTION CREDIT (71%) / TRENCH WIDTH (3.0') = 177.5'
5. LINEAR LENGTH OF TRENCH PROVIDED = 180'
   - FIVE TRENCHES 36.0 LF EACH
6. EXISTING GRADE: TRENCH I1: 447.7
   INVERT: TRENCH I1: 445.7
   EXISTING GRADE: TRENCH I2: 445.5
   INVERT: TRENCH I2: 443.5
   EXISTING GRADE: TRENCH I3: 445.5
   INVERT: TRENCH I3: 443.5
   EXISTING GRADE: TRENCH I4: 443.7
   INVERT: TRENCH I4: 441.7
   EXISTING GRADE: TRENCH I5: 443.7
   INVERT: TRENCH I5: 441.7

- 1ST REPLACEMENT SYSTEM :
  - APPLICATION RATE: 0.8
  - EFFECTIVE AREA BEGINNING DEPTH: 4.0'
  - BOTTOM MAXIMUM DEPTH: 6.0'

1. DESIGN FLOW:
   - 6 BEDROOMS AT 150 GPD
   - 6x150 GPD = 900 GPD
2. SQUARE FOOTAGE OF DRAIN FIELD REQUIRED:
   - DESIGN FLOW (900 GPD) / APPLICATION RATE (0.8) = 1125 SF
3. SIDEWALL REDUCTION CREDIT:
   - TRENCH WIDTH (W) = 3.0'
   - TRENCH EFFECTIVE DEPTH (D) =2.0'
   - (W+2) / (W+1+2D) X 100 =62%
4. LINEAR LENGTH OF TRENCH REQUIRED:
   - DRAIN FIELD SQUARE FOOTAGE (1125) X SIDEWALL REDUCTION CREDIT (62%) / TRENCH WIDTH (3.0') = 232.5'
5. LINEAR LENGTH OF TRENCH PROVIDED = 234.0'
   - THREE TRENCHES 78.0 LF EACH
6. EXISTING GRADE: TRENCH R1: 441.5
   INVERT: TRENCH R1: 439.5
   EXISTING GRADE: TRENCH R2: 439.6
   INVERT: TRENCH R2: 437.6
   EXISTING GRADE: TRENCH R3: 437.8
   INVERT: TRENCH R3: 435.8

- 2ND REPLACEMENT SYSTEM :
  - APPLICATION RATE: 0.8
  - EFFECTIVE AREA BEGINNING DEPTH: 3.0'
  - BOTTOM MAXIMUM DEPTH: 5.0'

1. DESIGN FLOW:
   - 6 BEDROOMS AT 150 GPD
   - 6x150 GPD = 900 GPD
2. SQUARE FOOTAGE OF DRAIN FIELD REQUIRED:
   - DESIGN FLOW (900 GPD) / APPLICATION RATE (0.8) = 1125 SF
3. SIDEWALL REDUCTION CREDIT:
   - TRENCH WIDTH (W) = 3.0'
   - TRENCH EFFECTIVE DEPTH (D) =2.0"
   - (W+2) / (W+1+2D) X 100 = 62%
4. LINEAR LENGTH OF TRENCH REQUIRED:
   - DRAIN FIELD SQUARE FOOTAGE (1125) X SIDEWALL REDUCTION CREDIT (62%) / TRENCH WIDTH (3.0') = 232.5'
5. LINEAR LENGTH OF TRENCH PROVIDED = 235.0'
   - FIVE TRENCHES 47 LF EACH
6. EXISTING GRADE: TRENCH R1: 436.3
   INVERT: TRENCH R1: 434.3
   EXISTING GRADE: TRENCH R2: 436.3
   INVERT: TRENCH R2: 434.3
   EXISTING GRADE: TRENCH R3: 434.8
   INVERT: TRENCH R3: 432.8
   EXISTING GRADE: TRENCH R4: 434.8
   INVERT: TRENCH R4: 432.8
   EXISTING GRADE: TRENCH R1: 433.4
   INVERT: TRENCH R1: 431.4



PLAN VIEW
SCALE: 1"=30'

E 1,325,100
N 565,700

N 565,700
E 1,325,750

Approved Septic System Plan
Howard County Health Department
NORWECO TANKLP 750
w/2000 gal Pump tank
I GOULDS WS1015HF pump or equiv
[signature] 12/10/2020
Signature Date
TO LPD for 6-Bedroom SFD

OWNER/DEVELOPER

WILLIAMSBURG GROUP
5485 HARPERS FARM ROAD, SUITE 200
COLUMBIA, MARYLAND 21044
410.997.8800

SITE PLAN FOR BAT INSTALLATION
THE WOODLANDS
5629 DOSA COURT, LOT 8

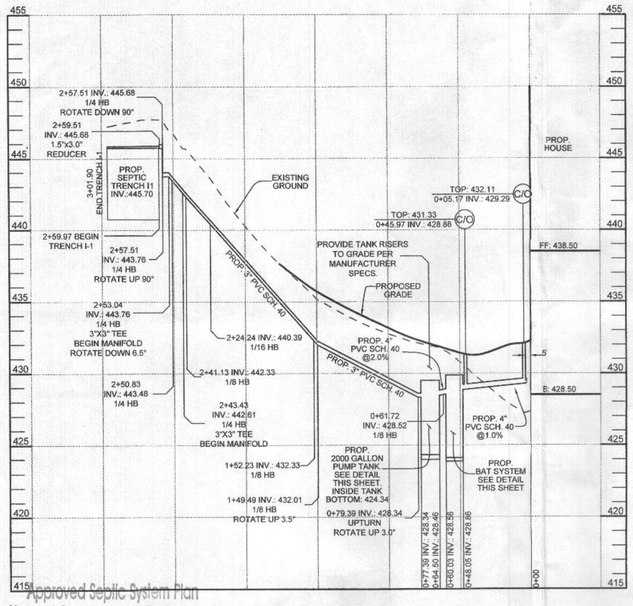
TAX MAP 28 GRID 23 PARCEL 15
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — JAMES M. SILL — No. 32025 — PROFESSIONAL ENGINEER

SILL ENGINEERING GROUP, LLC
16005 Frederick Road, 2nd Floor
Woodbine, Maryland 21797
Phone: 443.325.5076
Fax: 410.696.2022
Email: info@sillengineering.com
Civil Engineering for Land Development

DESIGN BY:	JJ
DRAWN BY:	JJ
CHECKED BY:	PS
SCALE:	AS SHOWN
DATE:	NOVEMBER 30, 2020
PROJECT #:	20-003
SHEET #:	1 of 2

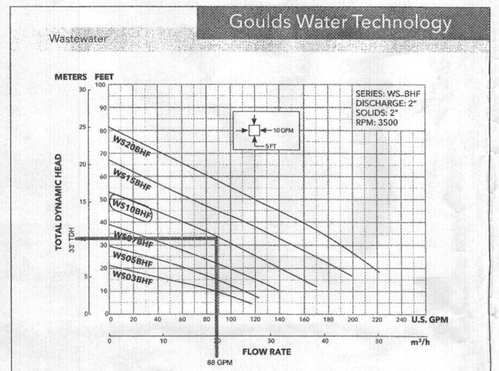
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 32025, EXPIRATION DATE: JUNE 20, 2021



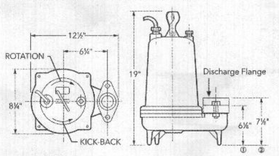
PROFILE VIEW

SCALE: HORIZ.: 1"=50'
VERT.: 1"=50'

Approved Septic System Plan
Howard County Health Department
NORWECO TNTLP 750
w/ 2000-gallon Pump Tank
2 GOULDS WS10BHF pump or equiv.
Signature
Date
To LPD for 6-bedroom SFD



DIMENSIONS
(All dimensions are in inches. Do not use for construction purposes.)

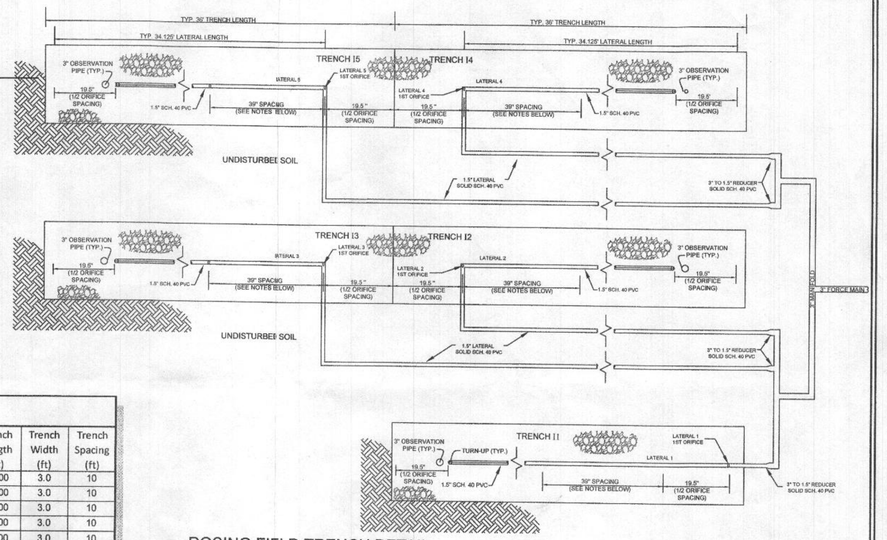


Discharge Flange:
① 2" NPT standard
② 3" NPT optional (order an A1-3)

PAGE 3

BAT NOTES

1. ANY CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED BAT SITE PLAN MAY BE REQUIRED.
2. THE MAXIMUM DEPTH OF THE BAT PER THE MANUFACTURER'S SPECIFICATION IS 3 FEET. DEEPER INSTALLATIONS MAY REQUIRE PRECAST CONCRETE RISERS.
3. THE BLOWER MAY NOT BE LOCATED MORE THAN 50 FEET FROM THE TANK BASED ON THE MANUFACTURER'S SPECIFICATIONS.
4. THE BAT SYSTEM SHALL BE MAINTAINED AND OPERATED FOR THE LIFE OF THE SYSTEM.
5. THE BAT SHALL BE OPERATED BY AND MAINTAINED BY A CERTIFIED SERVICE PROVIDER.
6. WITHIN ONE MONTH OF INSTALLATION, A PERSON INSTALLING THE BAT SYSTEM SHALL REPORT TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) IN A MANNER ACCEPTABLE TO MDE, THE ADDRESS AND DATE OF COMPLETION OF THE BAT INSTALLATION AND THE TYPE OF BAT INSTALLED.
7. ELECTRICAL WORK FOR THE BAT INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
8. AN AGREEMENT AND EASEMENT MUST BE COMPLETED AND SIGNED BY ALL APPLICABLE PARTIES, AND RECORDED IN THE LAND RECORDS OF HOWARD COUNTY.
9. THE HEALTH DEPARTMENT REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO FINAL APPROVAL OF THE INSTALLATION.
10. DOSE TO BE 225 GALLONS ON A PUMP RUN TIME OF 2.56 MINUTES ON DEMAND.
11. PUMP TO BE A GOULDS WS10BHF SERIES OR EQUIVALENT.
12. BAT SYSTEM TO BE A NORWECO SINGULAIR MODEL TNTLP-750 OR EQUIVALENT.
13. TOTAL DYNAMIC HEAD (TDH) CALCULATION:
- TDH = STATIC HEAD + DISTAL HEAD + FRICTION HEAD + LATERAL FRICTION HEAD SAFETY FACTOR = 20.85' + 2.5' + 8.21' + 1.5' = 33.07' USE 33'

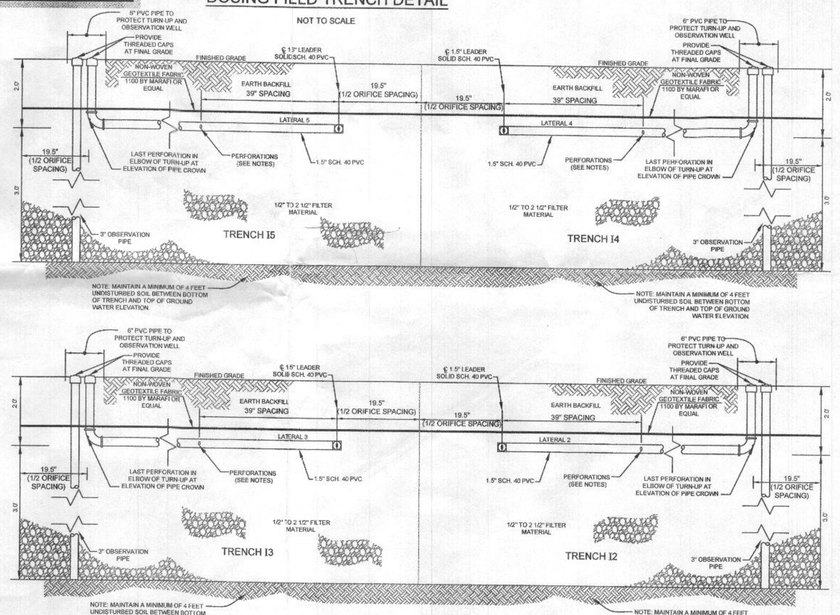


TRENCH DESIGN CHART

Trench	Prop. Grd Elev. (ft)	Stone Elev. (ft)	Pipe Inv. Elev. (ft)	Bottom Elev. (ft)	Depth of Stone (ft)	Effective Depth (ft)	Trench Length (ft)	Trench Width (ft)	Trench Spacing (ft)
I1	447.70	446.2	445.70	442.70	3.5	1.50	36.00	3.0	10
I2	445.49	444.0	443.49	440.49	3.5	1.50	36.00	3.0	10
I3	445.49	444.0	443.49	440.49	3.5	1.50	36.00	3.0	10
I4	443.70	442.2	441.70	438.70	3.5	1.50	36.00	3.0	10
I5	443.70	442.2	441.70	438.70	3.5	1.50	36.00	3.0	10

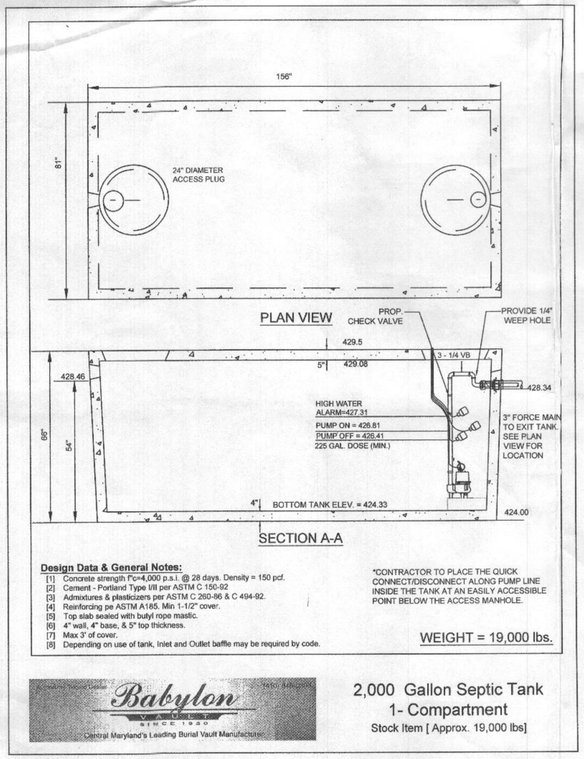
DOSING FIELD TRENCH DETAIL

NOT TO SCALE



SEWAGE DISPOSAL AREA LATERAL SIZING SUMMARY

Lateral No.	Prop. Grd Elev. (ft)	Invert Elev. (ft)	Trench Bottom Elev. (ft)	Lateral Length (ft)	Lateral Length (in)	Head (ft)	Orifice Diameter (in)	Orifice Flow Rate (gpm)	Orifice Spacing (in)	Number of Orifices	Trench Flow Rate (gpm)	Zone
I1	447.70	445.7	442.70	34.125	410	2.0	5/16	1.63	39	11	17.93	1
I2	445.49	443.6	440.49	34.125	410	4.2	1/4	1.51	39	11	16.61	
I3	445.49	443.5	440.49	34.125	410	4.2	1/4	1.51	39	11	16.61	
I4	443.70	441.7	438.70	34.125	410	2.0	5/16	1.63	39	11	17.93	2
I5	443.70	441.7	438.70	34.125	410	2.0	5/16	1.63	39	11	17.93	
											87.01	TOTALS
										Use	88.00 gpm	



Design Data & General Notes:

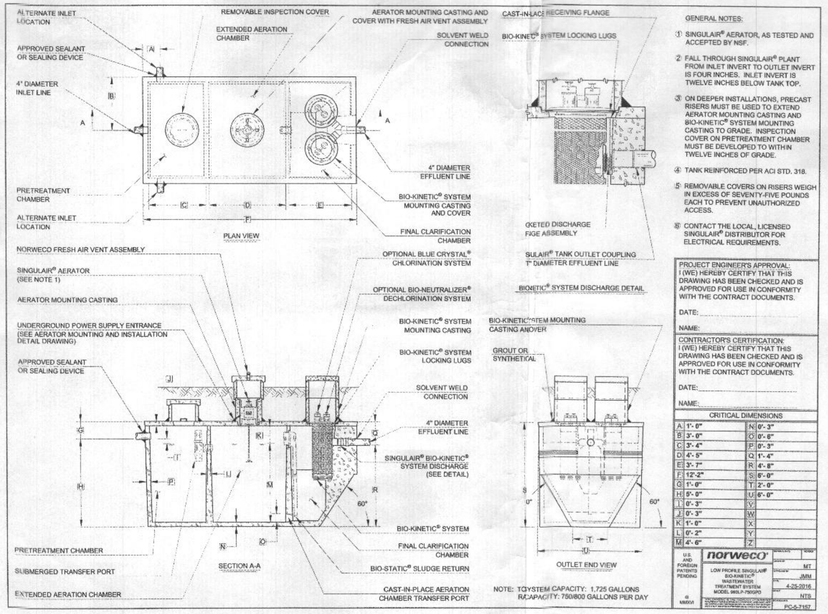
[1] Concrete strength f'c=4,000 p.s.i. @ 28 days. Density = 150 pcf.
[2] Cement - Portland Type I/II per ASTM C 150-92
[3] Admixtures & plasticizers per ASTM C 260-86 & C 494-92.
[4] Reinforcing pe ASTM A185. Min 1-1/2" cover.
[5] Top slab sealed with butyl rope mastic.
[6] 4" wall, 4" base, & 5" top thickness.
[7] Max 3' of cover.
[8] Depending on use of tank, Inlet and Outlet baffle may be required by code.

*CONTRACTOR TO PLACE THE QUICK CONNECT/DISCONNECT ALONG PUMP LINE INSIDE THE TANK AT AN EASILY ACCESSIBLE POINT BELOW THE ACCESS MANHOLE.

WEIGHT = 19,000 lbs.

Babylon VAULT SINCE 1930 — Central Maryland's Leading Burial Vault Manufacturer

2,000 Gallon Septic Tank
1- Compartment
Stock Item [Approx. 19,000 lbs]



GENERAL NOTES:

① SINGULAIR® AERATOR, AS TESTED AND ACCEPTED BY NSF.

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. INSPECTION COVER ON PRETREATMENT CHAMBER MUST BE DEVELOPED TO WITHIN TWELVE INCHES OF GRADE.

④ TANK REINFORCED PER ACI STD. 318.

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.

NOTE: ① SYSTEM CAPACITY: 1,725 GALLONS
RECAPACITY: 750/800 GALLONS PER DAY

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

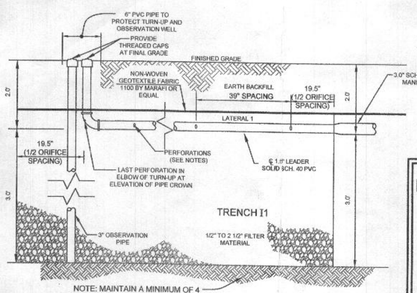
A	1'- 0"	N	0'- 3"
B	3'- 0"	O	0'- 6"
C	3'- 4"	P	0'- 3"
D	4'- 5"	Q	1'- 4"
E	3'- 7"	R	4'- 8"
F	12'- 2"	S	0'- 6"
G	1'- 6"	T	2'- 0"
H	5'- 0"	U	6'- 0"
I	0'- 3"	V	
J	0'- 3"	W	
K	1'- 6"	X	
L	0'- 2"	Y	
M	4'- 4"	Z	

norweco — LOW PROFILE SINGULAIR® BIO-KINETIC® SYSTEM TREATMENT SYSTEM MODEL MKLP-750(D) — Drawn: MT — Checked: JMM — Date: 4-23-2018 — Scale: NTS — PC-D-7157

U.S. AND FOREIGN PATENTS PENDING

DISTRIBUTION LATERAL PROFILE DOSING FIELDS

NOT TO SCALE



NOTES:

1. CONTRACTOR TO BUILD / INSTALL 3' WIDE DISPOSAL TRENCHES.
2. DISTRIBUTION LATERALS TO BE INSTALLED ON LEVEL GRADE. BOTTOM OF TRENCH TO BE EXCAVATED ON LEVEL GRADE.
3. CONTRACTOR TO DRILL ORIFICES IN DISTRIBUTION LATERALS AS SHOWN. INSTALL PIPE ORIFICE DOWNWARD.
4. THE LAST HOLE IN THE LATERALS MUST BE LOCATED AT THE CROWN OF THE INVERT.
5. TERMS ORIFICE/ORFICES AND PERFORATION/PERFORATIONS ARE INTERCHANGEABLE.
6. LATERAL 1, 4, AND 5 HAVE AN ORIFICE SIZE OF 5/16". LATERAL 2 AND 3 HAVE AN ORIFICE SIZE OF 1/4".

OWNER/DEVELOPER

WILLIAMSBURG GROUP
5485 HARPERS FARM ROAD, SUITE 200
COLUMBIA, MARYLAND 21044
410.997.8800

LOW PRESSURE DOSING SYSTEM PLAN AND PROFILE
THE WOODLANDS
5629 DOSA COURT, LOT 8

TAX MAP 28 GRID 23 — PARCEL 15
5TH ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — PAUL M. SILL — No. 32025 — PROFESSIONAL ENGINEER

SILL ENGINEERING GROUP, LLC
16005 Frederick Road, 2nd Floor
Woodbine, Maryland 21797
Phone: 443.325.5076
Fax: 410.696.2022
Email: info@sillengineering.com
Civil Engineering for Land Development

DESIGN BY:	JJ
DRAWN BY:	JJ
CHECKED BY:	PS
SCALE:	AS SHOWN
DATE:	NOVEMBER 30, 2020
PROJECT #:	20-003
SHEET #:	2 of 2

PROFESSIONAL CERTIFICATION: 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. 32025, EXPIRATION DATE: JUNE 20, 2021