DATE OF TEST: APRIL 21, 2020 WITNESS: KARL DROWN
TEST PIT #1 ; ELEV.: 97.83 SOIL EVALUATOR: STEVE GILBERT, R.P.L.S.

	DEPTH FROM SURFACE FEET	INCHES	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER (STRUCTURE, STONES, BOULDERS, CONSISTENCY, & GRAVEL)
1	0 – 1	2	A	SANDY LOAM	10YR 3/4		
2	1	2 – 2 6	B	SANDY LOAM	10YR 5/6		
3	2						
4	3	26 – 60	C1	LOAMY SAND	2.5Y 5/3		
5	4					60"	
6	5						
7	6	60 – 120	C2	SANDY LOAM	2.5Y 5/4		NOT COMPACT–*SIEVE ANALYSIS OF C2 LAYER DETERMINED SOIL TO BE SANDY LOAM, CLASS II
8	7						
9	8						
10	9						
	10						

PERCOLATION RATE: *30 M.P.I. @ C2 LAYER

GROUNDWATER: MOTTLING @ 60" (EL.: 92.83), WEEPING @ 70", STANDING @ 100"

TEST PIT INFORMATION

S.W.COLE ENGINEERING, INC.

Report of Title V Hydrometer

ASTM D422-63 (07)

Project Name: Title V Lab Testing
Project Location: 24 Juniper Ln Rehoboth, MA
Client: SFG Associates
Material Description: Test Pit Sample
Material Source: TP1 C2

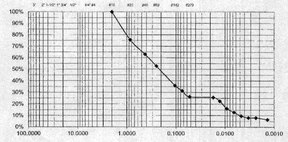
Project Number: 20-0232
Lab ID: 24407
Date Received: 4/29/2020
Date Completed: 5/5/2020
Tested By: PM

Sieve Analysis

Sieve Size	Standard Designation (mm)	Amount Passing (%)	Specification (name)
No. 10	2	100	
No. 20	0.85	76	
No. 40	0.425	63	
No. 60	0.26	53	
No. 140	0.105	36	
No. 200	0.075	31	
No. 270	0.053	26.3	

Hydrometer Analysis

Particle Size (mm)	Amount Passing (%)
0.01733	25.7
0.01276	22.5
0.00922	16.1
0.00657	12.8
0.00470	9.6
0.00334	8.0
0.00236	8.0
0.00137	6.4



Particle Distribution: Sand (No. 10 - No. 270) **73.7%** Fines (0.05 - 0.002) **18.9%** Clay (<0.002) **7.4%**

Comments: Sandy Loam, Cl., II

Reviewed By

499A Winthrop Street, Taunton, MA 02780 • P: 508-822-6954 • E: info@taunton@swcole.com
Geotechnical Engineering Construction Materials Testing and Special Inspections GeoEnvironmental Services

S 66°37'32" E 390.00'

S 62°48'31" E 410.00'

S 13°00'45" W 180.00'

N 76°59'15" W 800.00'

N 13°21'55" E 290.00'

N 28°45'04" E 62.94'

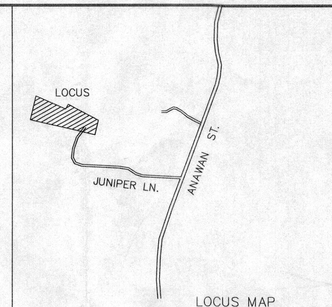
BOARD OF HEALTH NOTES

- RE–ROUTE THE EXISTING GRAY WATER LINE FROM THE KITCHEN, IN THE CELLAR, TO EXIT IN THE BUILDING SEWER.
- TANK CONSTRUCTION SHALL MEET THE REQUIREMENTS SPECIFIED IN TITLE 5, SECTION 15.226.
- CONCRETE IS TO BE 4000 PSI @28 DAYS.
- TONGUE & GROOVE JOINT TO BE SEALED WITH BUTYL RESIN TO MAKE WATERTIGHT.
- INSTALL A ZABEL OR EQUIVALENT EFFLUENT FILTER IN THE SEPTIC TANK OUTLET TEE.
- ALL RISERS ARE TO BE MADE WATERTIGHT.
- ALL PIPE IS TO BE SCH. 40 P.V.C. OR EQUIVALENT.
- ALL JOINTS ARE TO BE MADE WATERTIGHT.
- ALL STONE IS TO BE DOUBLE WASHED.
- ALL COMPONENTS SHALL HAVE A MINIMUM OF 9" AND A MAXIMUM OF 36" OF COVER
- THE PUMP IS TO BE WIRED, THROUGH A 1–1/4" CONDUIT, TO ITS OWN 20 AMP CIRCUIT BREAKER.
- WIRE THE CONTROL FLOAT TO A HIGH WATER ALARM INSIDE THE HOUSE. THE ALARM IS TO BE AUDIO AND VISUAL.
- THE ALARM IS TO BE ON A SEPARATE CIRCUIT FROM THE PUMP.
- THE VENT IS TO BE PLACED IN AN AREA WHERE IS WILL NOT BE SUSCEPTIBLE TO DAMAGE.
- THE CONTRACTOR IS TO VERIFY ALL ELEVATIONS AND UTILITY LOCATIONS PRIOR TO CONSTRUCTION. ANY DIFFERENCES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
- THE RESERVE AREA IS TO BE IN THE SAME LOCATION AS THE ACTIVE SYSTEM.
- THERE ARE NO CONFLICTS WITH TITLE 5, SECTION 15.220(4)(k) – LOCATION OF PUBLIC AND PRIVATE WATER SUPPLIES.
- 5' IS TO BE EXCAVATED ALL AROUND THE SYSTEM, DOWN 26"± TO THE C1 LAYER, AND REPLACED WITH CLEAN SAND & GRAVEL AS PER TITLE 5, SECTION 15.255.

- A LOCAL UPGRADE IS REQUESTED UNDER TITLE 5, SECTION 15.405(1)(i) TO ALLOW THE USE OF A SIEVE ANALYSIS, IN LIEU OF PERFORMING A PERCOLATION TEST, TO DETERMINE THE SOIL CLASSIFICATION.

LEGEND

- DEEP OBSERVATION HOLE
- --98-- EXISTING CONTOUR
- 99 PROPOSED CONTOUR
- X98.0 SPOT ELEVATION
- W WELL
- UTILITY POLE
- O/H OVERHEAD UTILITES
- EXISTING TREELINE



LOCUS MAP
n.t.s.

DESIGN CALCULATIONS

CAPACITY REQUIRED – RESIDENTIAL USE:
DESIGN FLOW:
4 BEDROOMS @ 110 Gal/Day/Bedroom = 440 Gal/Day
440 Gal/Day X 125% = 550 Gal/Day Required

CAPACITY PROVIDED:
SEPTIC TANK:
DESIGN FLOW = 440 Gal/Day
X 200%
REQUIRED SIZE = 880 Gal/Day
SIZE PROVIDED = 1,500 Gal/Day

LEACHING FACILITY:
DESIGN PERCOLATION RATE: 30 MPI
SOIL TEXTURAL CLASS: CLASS II
LONG TERM ACCEPTANCE RATE (LTAR): 0.33 GPD/SF

BOTTOM AREA: 56' x 30' = 1,680 SF
SIDEWALL AREA: = 0
TOTAL AREA=1,680 SF
x LTAR .33 Gal/Day/SF
TOTAL CAPACITY = 554 Gal/Day

SYSTEM IS NOT DESIGNED FOR A GARBAGE GRINDER OR WATER SOFTENER BACKWASH.

MAP 58, LOT 11
193,837 S.F.

MEET BREAKOUT ELEV. OF 98.18 @15' OFF S.A.S.

INSTALL VENT

100' RADIUS FROM WELL

APPROXIMATE LOCATION OF EXISTING S.A.S. TO BE PUMPED, CRUSHED, & ABANDONED

EXISTING DRYWELL± (ACTUAL LOCATION UNKNOWN)

EXISTING 4 BR. HOME #24 JUNIPER LN.

T.O.F.: 98.72

EXISTING WELL W

RE–ROUTE KITCHEN LINE IN CELLAR TO CONNECT INTO BUILDING SEWER

EXISTING SEPTIC TANK TO BE PUMPED, CRUSHED, & ABANDONED

GARAGE

SUN ROOM

O/H

ASPHALT DRIVE

BENCHMARK: TOP OF RETAINING WALL ELEV.: 100.67

PUMP CALCULATIONS

CLASS II SOIL REQUIRES 1 DOSE/DAY
RECOMMEND 4 DOSES/DAY
110 GALLONS TO BE PUMPED
PUMP CHAMBER INSIDE DIMENSIONS:
8.0' X 4.5' X 7.48 GAL/CF = 269 GAL/FT
110/269 = 0.41' TO BE PUMPED
ALARM FLOAT TO BE SET A MINIMUM OF 1.64' BELOW THE OUTLET ELEVATION

HEAD LOSS

STATIC HEAD: 97.85 – 92.88 = 4.97'
DYNAMIC HEAD: 2" SERV., l = 32', v = 3.0 FPS
EQUIV. LENGTHS: 1 TEE: 6.6'
1 CHECK VALVE: 12.0'
18.0' SAY 20'

EQUIV. LENGTH: 32' + 20' = 52'
A = .02 SF r = .04

$$h_L = \frac{(3.0)^{1.85}(52')}{[(1.318)(130)]^{1.85}(.04)} = 1.30'$$

TOTAL HEAD: 4.97' + 1.30' = 6.26' SAY 10'
LIBERTY LE41M PUMPS 100 GPM @ 10'

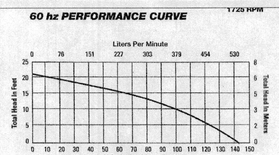
BUOYANCY CALCULATIONS

SEPTIC TANK SITS 1.18' IN WATER.
10.5' X 6.0' X 1.18' X 62.4 LBS/CF / 2000 LBS/TON = 2.32 TONS OF UPLIFT
SEPTIC TANK WEIGHS 6.0 TONS.

PUMP CHAMBER SITS 1.53' IN WATER.
8.5' X 5.0' X 1.53' X 62.4 LBS/CF / 2000 LBS/TON = 2.03 TONS OF UPLIFT
PUMP CHAMBER WEIGHS 4.0 TONS.

DIMENSIONAL DATA:
Weight: LE41M: 40 LBS.
Height: 14"
Major Width: 10.75" (manual models)
Maximum fluid temperature 140° F.

60 hz PERFORMANCE CURVE 1725 RPM



SSPMA CERTIFIED SB US

Specifications are subject to change without notice.

Liberty Pumps • 7000 Apple Tree Avenue • Bergen, New York 14416 • Phone 800-543-2550 Fax (585) 494-1639
www.libertypumps.com

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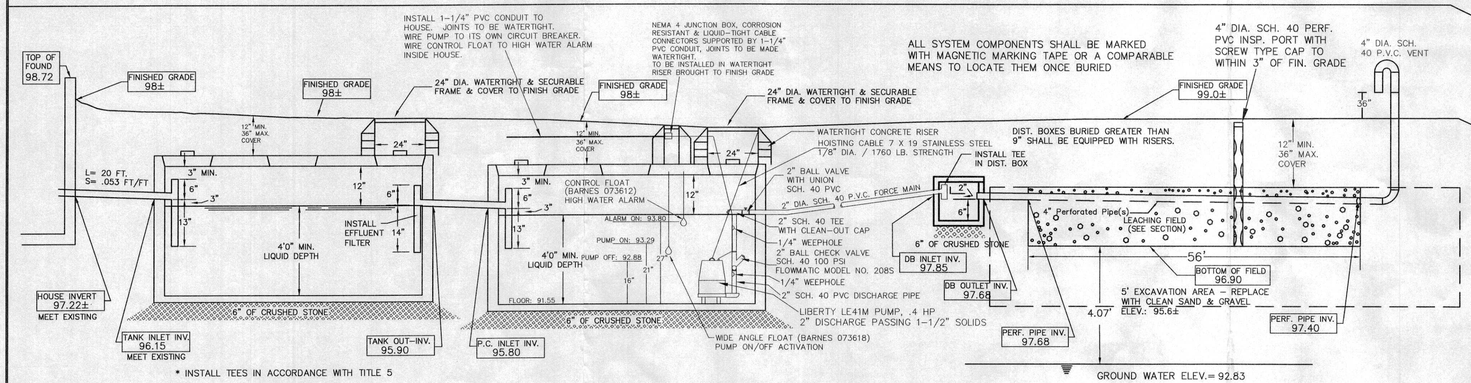


* INSTALL TEES IN ACCORDANCE WITH TITLE 5

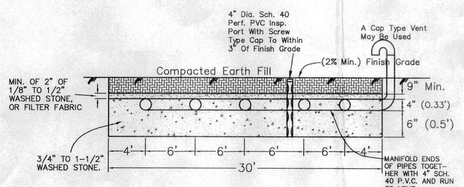
1,500 GALLON
PRECAST CONC. SEPTIC TANK
(4000 PSI CONC.)

1,000 GALLON
PRECAST CONC. PUMP CHAMBER
(4000 PSI CONC.)

PRECAST CONC.
DISTRIBUTION BOX

LEACHING FIELD
SOIL ABSCRPTION SYSTEM

TANKS & DIST. BOX FROM J & R PRE–CAST, INC.
16 COUNTY STREET BERKLEY, MA 02779
(508) 822–3311



SECTION (not to scale)

0 30 60 FEET
GRAPHIC SCALE 1" = 30'

BRADLEY STEVEN FITZGERALD No. 35070 CIVIL REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

STEPHEN T. GILBERT No.39687 REGISTERED PROFESSIONAL LAND SURVEYOR
COMMONWEALTH OF MASSACHUSETTS

RECEIVED
JUN. 30 2020
Board of Health

24 JUNIPER LANE

A SEPTIC SYSTEM REPAIR IN REHOBOTH, MA FOR PETER WAYSLOW

DATE: JUNE 26, 2020

SENNA FITZGERALD GILBERT ASSOCIATES
SFG ASSOCIATES, INC.
CIVIL ENGINEERS & LAND SURVEYORS
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