GENERAL NOTES:

1] NO GARBAGE DISPOSALS ARE TO BE INSTALLED
2] FILL MATERIAL FOR SYSTEMS CONSTRUCTED IN FILL SHALL CONSIST OF SELECT ON-SITE OR IMPORTED SOIL MATERIAL. THE FILL MATERIAL SHALL BE COMPRISED OF CLEAN GRANULAR SAND, FREE FROM ORGANIC MATTER DELETERIOUS SUBSTANCES. MIXTURES AND LAYERS OF DIFFERENT CLASSES OF SOILS SHALL NOT BE USED. THE FILL SHALL NOT CONTAIN ANY MATERIAL GREATER THAN 2 INCHES. A SIEVE ANALYSIS, USING A #4 SIEVE, SHALL BE PERFORMED ON A REPRESENTATIVE SAMPLE OF FILL. UP TO 45% BY WEIGHT OF THE SAMPLE MAY BE RETAINED ON THE #4 SIEVE. SIEVE ANALYSIS ALSO SHALL BE PERFORMED ON THE FRACTION OF THE FILL SAMPLE PASSING THE #4 SIEVE, SUCH ANALYSIS MUST DEMONSTRATE THAT THE MATERIAL MEETS EACH OF THE FOLLOWING SPECIFICATIONS:

SIEVE SIZE	EFFECTIVE PARTICAL SIZE	% THAT MUST PASS SIEVE
# 4	4.75 mm	100%
# 50	0.30 mm	10% – 100%
#100	0.15 mm	0% – 20%
#200	0.075 mm	0% – 5%

3] WHERE FILL IS REQUIRED TO REPLACE UNSUITABLE OR IMPERMEABLE SOILS, THE EXCAVATION OF THE UNSUITABLE MATERIAL SHALL EXTEND A MINIMUM OF FIVE FEET LATERALLY IN ALL DIRECTIONS BEYOND THE OUTER PERIMETER OF THE SOIL. ABSORPTION SYSTEM TO THE DEPTH OF NATURALLY OCCURRING PERVIOUS MATERIAL AS REQUIRED BY 310 CMR 15.240 (SOIL ABSORPTION SYSTEMS) AND REPLACED WITH FILL MATERIAL MEETING THE SPECIFICATIONS OF NOTE #2 ABOVE.
4] PRIOR TO PLACEMENT OF FILL, WHICH SHALL BE STOCKPILED AT THE EDGE OF THE EXCAVATION, AND FILLING IN GRADUALLY, THE BOTTOM OF THE EXCAVATION SHALL BE SCARIFIED AND RELATIVELY DRY. FILL SHALL NOT BE PLACED DURING RAIN OR SNOW STORMS. IF THE WATER TABLE ELEVATION IS ABOVE THE ELEVATION OF THE BOTTOM OF THE EXCAVATION, THE EXCAVATION SHALL BE DEWATERED AS NECESSARY.
5] A TWO TO FOUR YEAR SEPTIC TANK PUMPING SCHEDULE IS RECOMMENDED TO AVOID LEACHING AREA PROBLEMS.
6] ALL PIPE INSTALLED AFTER THE SEPTIC TANK SHALL BE SCHEDULE 40 PVC. JOINTS SHALL BE ELASTOMETRIC GASKETED INTEGRAL BELL TYPE JOINTS. ASSEMBLY SHALL BE PERFORMED AS PER MANUFACTURER'S SPECIFICATIONS.
7] THE BUILDING SEWER SHALL BE 4" SCH 40 PVC PIPE SURROUNDED BY A MINIMUM OF 6" OF GRAVEL.
8] THERE ARE NO KNOWN WELLS WITHIN 100 FEET OF THE PROPOSED SYSTEM, EXCEPT AS NOTED.
9] A BENCHMARK WILL BE SET IN A LOCATION NEAR THE LEACHING FACILITY PRIOR TO ANY CONSTRUCTION.
10] A SEIVE ANALYSIS SHALL BE PERFORMED ON THE FILL MATERIAL TO BE USED. A COPY OF THE RESULTS OF THE ANALYSIS SHALL BE SUBMITTED TO THE BOARD OF HEALTH FOR APPROVAL PRIOR TO ANY PLACEMENT OF FILL.
11] THE FILL MATERIAL USED SHALL BE PLACED IN 12" MAXIMUM COMPACTED LIFTS.
12] NO WETLANDS EXIST WITHIN 100' OF THE PROPOSED LEACHING FIELD OR RESERVE AREA.
13] THIS LOT DOES NOT LIE WITHIN A NITROGEN SENSITIVE AREA.
14] MAGNETIC TAPE TO BE APPLIED OVER ALL SYSTEM COMPONENTS.

SOILS DATA

SOIL EVALUATOR: GENE WILLIS, CHRISTIANSEN & SERGI, INC.
INSPECTOR: LEO CORMIER, MIDDLETON BOARD OF HEALTH

TEST PIT NO. 1 DATE: 5/28/02

ELEV. (FT)	DEPTH (IN)	DESCRIPTION
102.33	0	SURFACE
		A: 10YR3/2 BOULDERY, F.S.L.
102.16	2	GRANULAR, FRIABLE
		Bw: 10YR4/6 F.S.L.
99.25	37	GRANULAR, FRIABLE
		C1: 2.5Y5/4 F.L.S
97.33	60	MASSIVE V. FRIABLE
		C2: 2.5Y5/4 GRAVELLY/STONY,C.L.S
		MASSIVE to GRANULAR
		FIRM IN PLACE to LOOSE
93.83	GW@102	E.S.H.W.T. @ 102"
		ROOTS TO 102"
		15% GRAVEL
90.25	145	15% COBBLES,STONES,BOULDERS

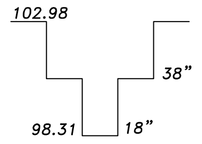
NO WEEP OBSERVED

TEST PIT NO. 2 DATE: 5/28/02

ELEV. (FT)	DEPTH (IN)	DESCRIPTION
102.14	0	SURFACE
		A: 10YR3/4 F.S.L.
102.16	3	GRANULAR, FRIABLE
		Bw: 10YR4/6 F.S.L.
99.25	27	GRANULAR, FRIABLE
		C1: 5Y4/3 STONEY,C.L.S
		MASSIVE to GRANULAR, FIRM IN PLACE
93.83	GW@90	E.S.H.W.T. @ 90"
93.83	90	ROOTS TO 66"
		C2: 2.5Y5/4 STONY,C.L.S
		MASSIVE to GRANULAR
90.25	140	FIRM IN PLACE

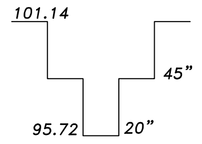
NO WEEP OBSERVED

PERC TEST NO. 1 DATE: 5/28/02



SOAK: 10:44:40
12" 10:59:49
9" 11:13:29
6" 11:31:06
PERC RATE: 6 MIN/IN

PERC TEST NO. 2 DATE: 5/28/02



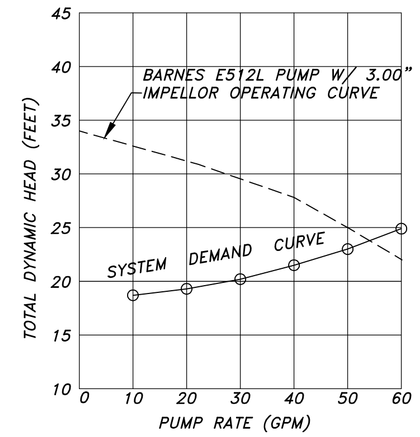
SOAK: 12:15:50
12" 12:30:57
9" 12:40:03
6" 12:52:51
PERC RATE: 5 MIN/IN

TABLE 1: PUMP DEMAND CALCULATIONS

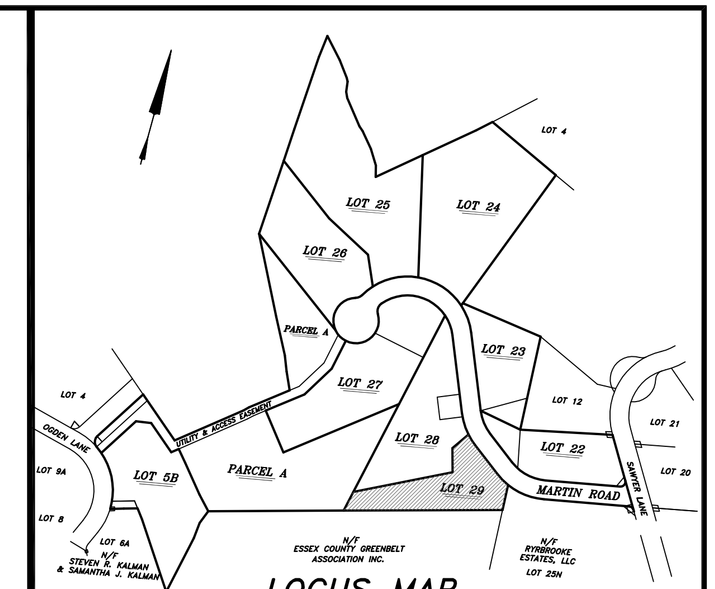
PUMP RATE (GPM)	VELOCITY (FPS)	TOTAL HEAD LOSS (FT)	STATIC HEAD (FT)	TDH (FT)
10	1.0	0.23	18.5	18.7
20	1.9	0.82	18.5	19.3
30	2.9	1.74	18.5	20.2
40	3.8	2.96	18.5	21.5
50	4.8	4.48	18.5	23.0
60	5.7	6.27	18.5	24.8

MIN DISCHARGE RATE = 32.2 GPM

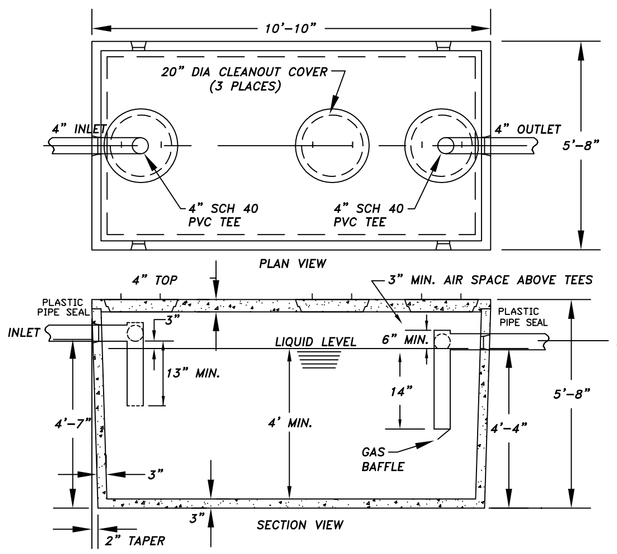
PUMP CURVE



USE BARNES E512L PUMP W/ 3.00" IMPELLOR OR APPROVED EQUAL



LOCUS MAP
NOT TO SCALE



SPECIFICATIONS:

1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. ALL REINFORCEMENT PER ASTM C1227-93.
3. TONGUE & GROOVE JOINT SEALED WITH BUTYLE RESIN.

1500 GALLON SEPTIC TANK

NOTES:

1. THE SEPTIC TANK IS TO BE MONOLITHIC CONSTRUCTION AND SHALL BE WATERTIGHT THROUGH MANUFACTURER'S SPECIFICATION AND WARRANTY.
2. THE SEPTIC TANK SHALL BE INSTALLED LEVEL AND TRUE TO GRADE ON A LEVEL STABLE BASE THAT HAS BEEN MECHANICALLY COMPACTED AND ON TO WHICH SIX INCHES OF CRUSHED STONE HAS BEEN PLACED TO MINIMIZE UNEVEN SETTLING. IF THE SEPTIC TANK IS PLACED IN FILL, PROPER COMPACTION IS REQUIRED TO ENSURE STABILITY AND TO PREVENT SETTLING. THE SEPTIC TANK SHALL HAVE A MINIMUM COVER OF NINE INCHES.
3. THE SEPTIC TANK, COVERS, CONNECTIONS AND PIPING SHALL BE DESIGNED AND CONSTRUCTED SO AS TO WITHSTAND AN ANTICIPATED MINIMUM H-10 LOADING.

DESIGN PARAMETERS

NO. OF BEDROOMS	5
MAX. NO. OF ROOMS	11
DESIGN FLOW	750 GAL/DAY
PERC RATE USED	6 MIN/IN
SOIL CLASS	CLASS I
LOADING RATE	0.70 GPD/SF
LEACHING AREA REQUIRED	1071 SF
EFFECTIVE LEACHING AREA FOR INFILTRATOR HIGH CAPACITY CHAMBERS	7.79 SL/LF
LENGTH OF TRENCHES REQUIRED	137.5
LENGTH OF TRENCHES PROVIDED	137.5
NUMBER OF TRENCHES	2
TRENCH LENGTH	68.75 FT
LENGTH OF CHAMBER	6.25 FT
NO. OF CHAMBERS PER TRENCH	11
TOTAL NO. OF CHAMBERS	22
SEPTIC TANK USED	1500 GALLON

CALCULATIONS

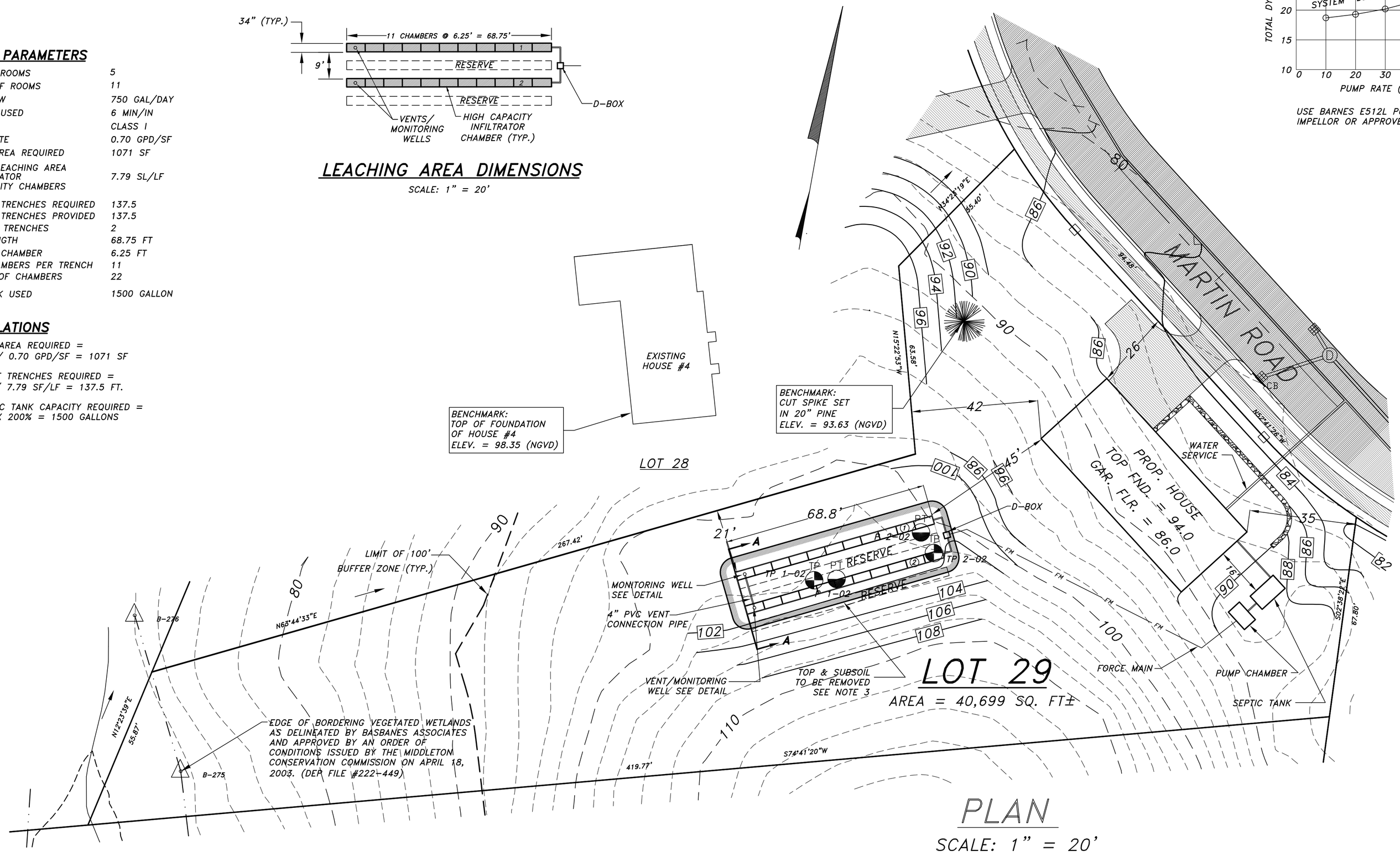
LEACHING AREA REQUIRED =
750 GPD / 0.70 GPD/SF = 1071 SF

LENGTH OF TRENCHES REQUIRED =
1071 SF / 7.79 SF/LF = 137.5 FT.

MIN. SEPTIC TANK CAPACITY REQUIRED =
750 GPD X 200% = 1500 GALLONS

LEACHING AREA DIMENSIONS

SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'

ASSESSORS MAP 11, LOT 24F

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SHEET 1 OF 2

SEPTIC SYSTEM DESIGN
2 MARTIN ROAD
LOT 29 RYEBROOK
MIDDLETON, MASS.

OWNER: RYEBROOK ESTATES, L.L.C.
733 TURNPIKE STREET, NORTH ANDOVER, MA 01845

CHRISTIANSEN & SERGI PROFESSIONAL ENGINEERS LAND SURVEYORS
160 SUMMER ST. HAVERHILL, MA 01830 TEL. 978-373-0310

PROFESSIONAL ENGINEER

PHILIP G. CHRISTIANSEN, P.E.
DATE: SEPTEMBER 4, 2003
REV: 2/18/04; 3/9/04
REV: 4/20/07, 7/6/07
DWG. NO. 97060R29