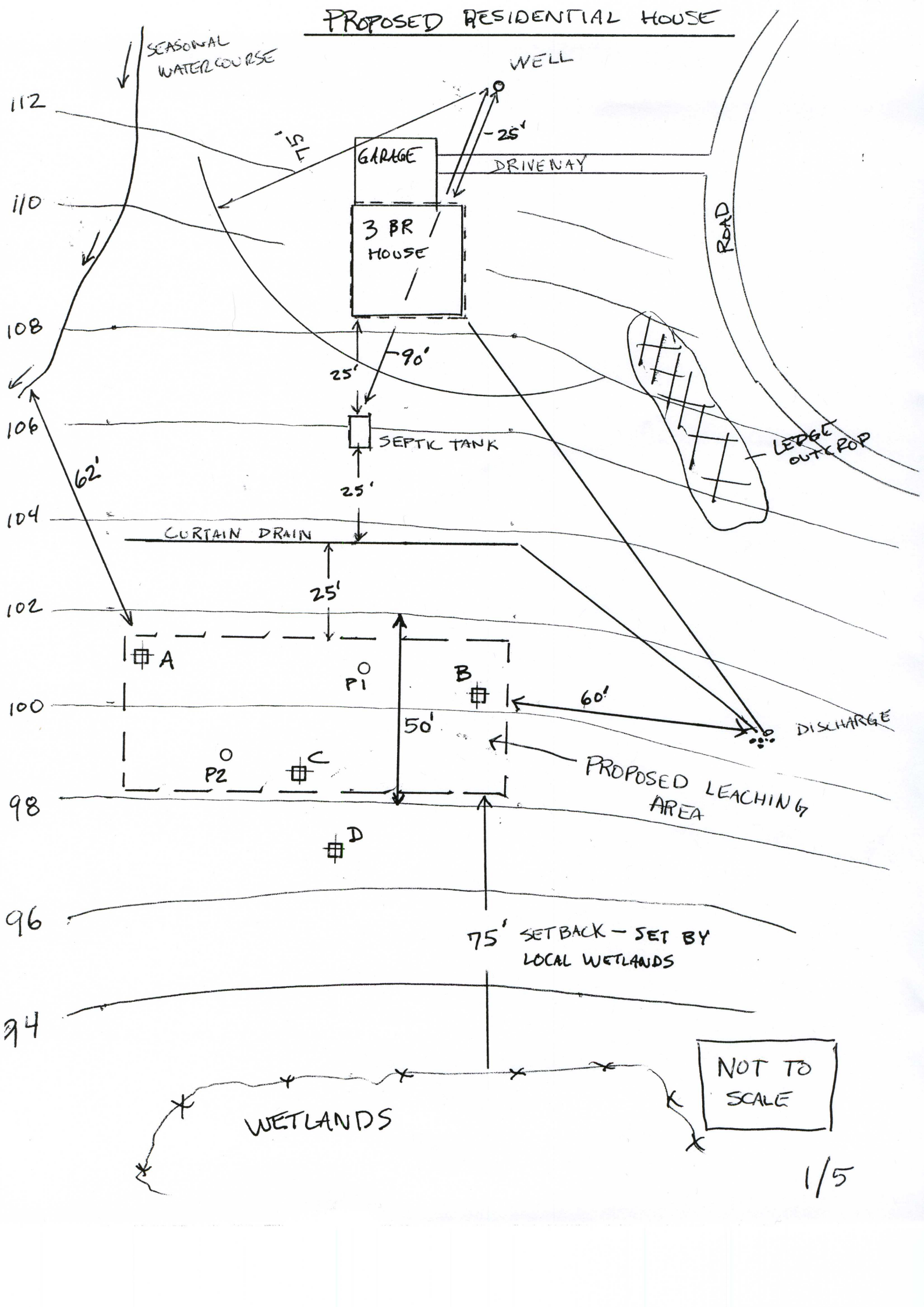
PROPOSED RESIDENTIAL HOUSE



SOIL DATA

DATE: 3/1/05 WITNESSED: SANITARIAN

TEST PIT A

0-6" TOPSOIL (T.S.)
6-24" FINE SANDY LOAM (FSL)
24-62" COMPACT FSL TILL
LEDGE @ 62"
MOTTLING @ 20"
SEEPAGE @ 30"

TEST PIT B

0-6" T.S.
6-22" FSL
22-48" COMPACT FSL TILL
LEDGE @ 48"
MOTTLING @ 19"
SEEPAGE @ 28"

TEST PIT C

0-4" T.S.
4-20" FSL
20-70" COMPACT FSL TILL
NO LEDGE
MOTTLING @ 18"
SEEPAGE @ 22"

TEST PIT D

SAME AS PIT C

PERC TEST 1

P_1 depth = 15"
P_1 = 16 min/inch

PERC TEST 2

P_2 depth = 16"
P_2 = 19 min/inch

FIND:

1. EFFECTIVE LEACHING AREA REQUIRED - ELA
2. MLSS - Minimum length required for EACH ROW
3. MAXIMUM DEPTH BOTTOM OF LEACHING SYSTEM CAN BE INSTALLED INTO GRADE
4. DESIGN LAYOUT THAT MEETS MINIMUM REQUIREMENTS IN ITEMS 1-3 ABOVE.

(1) MINIMUM EFFECTIVE LEACHING AREA REQ'D

ELA FOR 3BR HOUSE WITH A PERC RATE RANGE OF 10.1 - 20 min/inch = 675 SQUARE FEET [SEE TABLE #6]

ELA = 675 S.F.

(2) MLSS REQUIRED (minimum length of each row) — SEE APPENDIX A

$MLSS = HF \times FF \times PF$ FF = 1.5 PF = 1.5

HF: NEED SLOPE & DEPTH TO REST. LAYER

$\text{SLOPE} = \frac{\text{RISE}}{\text{RUN}} \times 100 = \frac{4}{50} \times 100 = 8\%$

RESTRICTIVE LAYER FOR MLSS: AVE DEPTH OF NATURAL SOIL TO REST. LAYER IN LEACHING AREA AND 25 - 50' DOWN GRADIENT.

RL = 18"

HF = 34

∴ $MLSS = 34 \times 1.5 \times 1.5 = 76.5'$ OR $77'$

MLSS = 77' ← minimum length required for each row

FOR THE EXAM, YOU MAY USE THE MOST RESTRICTIVE DEPTH OR AVERAGE THE TEST PIT DATA. HOWEVER, IF YOU CHOOSE TO AVERAGE, YOU MUST SHOW CALCULATIONS TO SUPPORT YOUR ANSWER.

(3) MAXIMUM DEPTH ALLOWED INTO GRADE

TP A

LEDGE 62" − 48" = 14"
G.W. 20" − 18" = 2"

TP B

LEDGE 48" − 48" = 0"
G.W. 19" − 18" = 1"

TP C

NO LEDGE
GW 18" − 18" = 0"

* DO NOT AVERAGE THESE TO DETERMINE MAX. DEPTH INTO GRADE
* DID NOT USE TEST PIT D

MOST RESTRICTIVE. BOTTOM OF SYSTEM CANNOT BE DEEPER THAN EXISTING GRADE. → 0"

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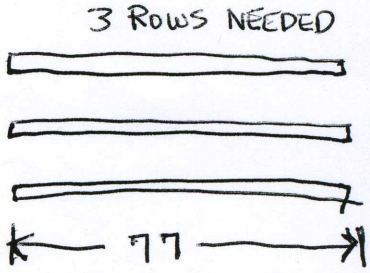
(4) DESIGN A LAYOUT →

ELA REQUIRED = 675 S.F.
MLSS (PER ROW) = 77'
MAX. DEPTH INTO GRADE = 0"

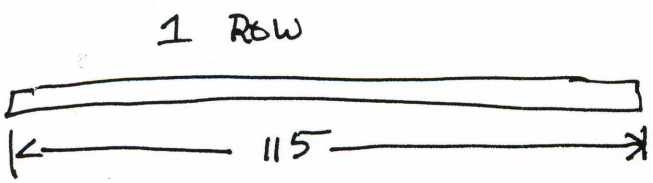
* SHALLOW LEACHING SYSTEM PREFERABLE SINCE BOTTOM CANNOT BE DEEPER THAN EXISTING GRADE

(A) 12" STONE TRENCH ≈ $\frac{675 \text{ S.F.}}{3.0 \text{ S.F./L.F.}}$ = 225 L.F. →



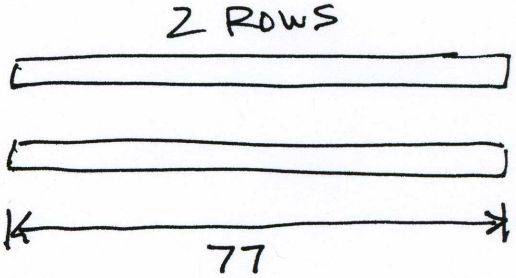
ELA = 693 S.F.

(B) 12" CONCRETE GALLERY ≈ $\frac{675 \text{ SF}}{5.9 \text{ SF/LF}}$ = 115 L.F.



ELA = 678 S.F.

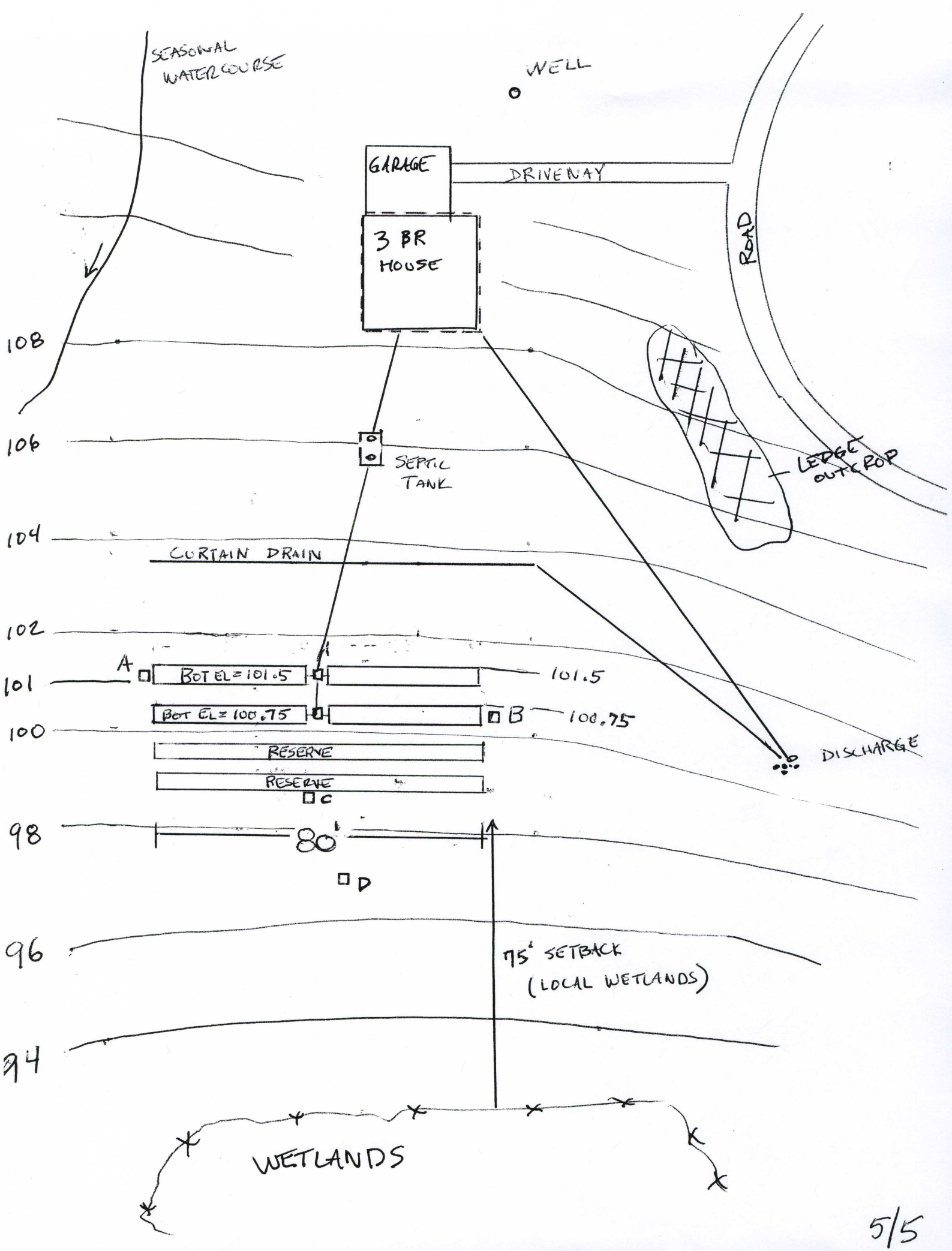
OR



USE ↗

ELA = 908 S.F.

4/5


SEASONAL WATERCOURSE
WELL
GARAGE
DRIVEWAY
3 BR HOUSE
ROAD
108
106
SEPTIC TANK
LEDGE OUTCROP
104
CURTAIN DRAIN
102
A
101
BOT EL=101.5
101.5
BOT EL=100.75
B
100.75
100
RESERVE
RESERVE
C
DISCHARGE
98
80'
D
96
75' SETBACK (LOCAL WETLANDS)
94
WETLANDS