FIELD EVALUATION SHEET

PRELIMINARY EVALUATION DATE April 2, 2020, FIELD EVALUATION DATE April 2, 2020
PROPERTY OWNER: Jeff + Judy Peysar
ADDRESS: _____ CITY, STATE, ZIP: Aitkin, Mn. 56431 PHONE 218-927-6720 or 218-821-5982
LEGAL DESCRIPTION: _____
PIN# _____ SEC 33 T 46 R 25 TWP NAME Glen
FIRE# _____ LAKE/RIVER Clear Lake LAKE CLASS Rec. OHWL _____ FT.

DESCRIPTION OF SOIL TREATMENT AREAS

	AREA #1	AREA #2
DISTURBED AREAS	YES ___ NO X	YES ___ NO ___
COMPACTED AREAS	YES ___ NO X	YES ___ NO ___
FLOODING	YES ___ NO X	YES ___ NO ___
RUN ON POTENTIAL	YES ___ NO X	YES ___ NO ___
SLOPE %	_____	_____
DIRECTION OF SLOPE	N-S	_____
LANDSCAPE POSITION	_____	_____
VEGETATION TYPES	Wooded	_____

REFERENCE BM ELEV. _____ FT.
REFERENCE BM DESCRIPTION _____

DEPTH TO STANDING WATER OR MOTTLED SOIL: BORING# 1 86"±, 1A 84"±, 2 _____, 2A _____

BOTTOM ELEVATION–FIRST TRENCH OR BOTTOM OF ROCK BED: #1 _____ FT., #2 _____ FT.

SOIL SIZING FACTOR: SITE # 1 1.27, SITE #2 _____

CONSTRUCTION RELATED ISSUES: _____

LIC# L 2132 SITE EVALUATOR SIGNATURE: Tom O'Neil
SITE EVALUATOR NAME: Tom O'Neil TELEPHONE# 218-927-6070
LUG REVIEW _____ DATE _____
Comments: _____

SOIL BORING LOGS ON REVERSE SIDE

Form des 2/20/98

Pit 1

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-6	Loam	10yr 3/2
6-14	Loam	10yr 4/3
14-24	Sandy Loam	10yr 4/4
24-48	med. Sand Some small rock	10yr 4/4
48-86	med. Sand	10yr 4/6

no mottles found

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

Same Soils

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

TRENCH AND BED WORKSHEET

1. AVERAGE DESIGN FLOW

A. Estimated 450 gpd *(see figure A-1)*
or measured ___ x 1.5 *(safety factor)* = ___ gpd

B. Septic tank capacity 1,000 gal *(see figure C-1)*
use a 1650 Combo

2. SOILS *(Site evaluation data)*

C. Depth to restricting layer = 7+ ft

D. Max depth of system Item 2C - 3 ft = 4 ft - 3 ft = 4 ft

E. Texture sandy loam/med sand Percolation rate 6-15 MPI

F. Soil Sizing Factor (SSF) 1.27 sqft/gpd *(see figure D-15)*

G. % Land Slope 3 %

3. TRENCH or BED BOTTOM AREA

H. For trenches with 6 inches of rock below the pipe:
A x F = ___ gpd x ___ sqft/gpd = ___ sqft

I. For trenches with 12 inches of rock below the pipe:
A x F x 0.8 = 450 gpd x 1.27 sqft/gpd x 0.8 = 458 sqft

J. For trenches with 18 inches of rock below the pipe:
A x F x 0.66 = ___ gpd x ___ sqft/gpd x 0.66 = ___ sqft

K. For trenches with 24 inches of rock below the pipe:
A x F x 0.6 = ___ gpd x ___ sqft/gpd x 0.6 = ___ sqft

L. For gravity beds with 6 or 12 inches of rock below the pipe;
1.5 x A x F = 1.5 x ___ gpd x ___ sqft/gpd = ___ sqft
For pressure beds with 6 or 12 inches of rock below the pipe;
A x F = ___ gpd x ___ sqft/gpd = ___ sqft

4. DISTRIBUTION *(Check all that apply)*

___ Bed (< 6% slope) ___ Drop boxes (any slope) X Rock
X Trenches ___ Distribution box (< 3%) ___ Chamber
___ Pressure X Gravity ___ Gravelless

5. SYSTEM WIDTH, LENGTH and VOLUME

M. Select trench width = 3 ft

N. If using rock, divide bottom area by width: (H, I, J, K or L) ÷ M =
458 sqft ÷ 3 ft = 153 lineal feet
Rock depth below distribution pipe plus 0.5 foot times bottom area:
Rock depth in feet + 0.5 feet x Area (H,I,J,K, or L)
(1 ft + 0.5 ft) x 458 sqft = 687 cuft
Volume in cubic yards = cuft ÷ 27
687 cuft ÷ 27 = 26 cuyds
Weight of rock in tons = cubic yds x 1.4
26 cuyds x 1.4 = 37 tons

3 - 51' Trenches Min.

O. If using 10" Gravelless Pipe, Flow (A) x Gravelless SSF *(see figure D-9)*
___ gpd x ___ lineal feet/gpd = ___ lineal feet

P. If using Chambers, H,I,J, or K(based on hieght of chamber slats) ÷ width of chamber in feet(M)
___ sqft ÷ ___ ft = ___ lineal ft

6. LAWN AREA

Q. Select trench spacing, center to center = 9 feet

R. Multiply trench spacing by lineal feet R x Q = sqft of lawn area
9 ft x 153 ft = 1377 sqft

7. Include a drawing with scale (one inch = ___ ft). Show pertinent boundaries, right of way, easements, location of house, garage, driveway, all other imporvements, existing or proposed soil treatment system, well and dimensions of all elevations, setbacks and separation distances.

I hereby certify that I have completed this work in accordance with applicable ordinances, rules and laws.

Tom O'Neil (signature) L2132 (license #) April 2, 2020 (date)

A-1: Estimated Sewage Flows in Gallons per Day

number of bedrooms	Class I	Class II	Class III	Class IV
2	300	225	180	60%
3	450	300	218	of the
4	600	375	256	values
5	750	450	294	in the
6	900	525	332	Class I,
7	1050	600	370	II, or III
8	1200	675	408	columns.

C-1: Septic Tank Capacities (in gallons)

Number of Bedrooms	Minimum Liquid Capacity	Liquid capacity with garbage disposal	Liquid capacity with disposal & lift inside
2 or less	750	1125	1500
3 or 4	1000	1500	2000
5 or 6	1500	2250	3000
7, 8 or 9	2000	3000	4000

D-15: Soil Characteristics and Soil Sizing Factor (SSF) (> 3' separation)

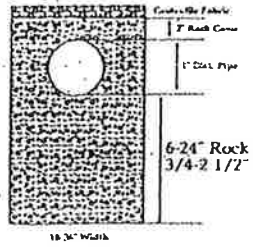
Percolation Rate minutes per inch (mpi)	Soil Texture	Soil Sizing Factor square feet/gallon per day (sqft/gpd)
faster than 0.1*	Coarse sand	0.83
0.1 to 5*	Medium sand Loamy sand	0.83
0.1 to 5**	Fine sand	1.67
6 to 15	Sandy loam	1.27
16 to 30	Loam	1.67
31 to 45	Silt loam Silt	2.00
46 to 60	Clay loam Sandy clay Silty clay	2.20
over 61 to 120***	Clay Sandy clay Silty clay	4.20
slower than 120****		

*Use systems for rapidly permeable soils: pressure distribution or serial distribution with no trench >25% of the total system.
**Soil having 50% or more fine sand plus very fine sand
***A mound must be used.
****An other or performance system must be used

D-9: Soil Characteristics and Soil sizing factors (SSF) for Gravelless Pipe

percolation rate (minutes/inch)	soil texture	lineal feet/ gallon/day
Faster than 0.1*	Coarse Sand	----
0.1 to 5	Medium Sand Loamy Sand	0.28
0.1 to 5	Fine Sand**	0.6
6 to 15	Sandy Loam	0.42
16 to 30	Loam	0.56
31 to 45	Silt Loam Silt	0.67
46 to 60	Clay Loam (CL) Sandy CL Silty CL	0.74
slower than 60***	Clay Sandy Clay Silty Clay	----

*Soil too coarse for sewage treatment. Use systems for rapidly permeable soils.
**Soil having 50% or more fine sand + very fine sand.
***Soil with too high a percentage of clay for installation of a standard inground system.



PUMP SELECTION PROCEDURE

A. Determine pump capacity

Gravity distribution

1. Minimum is 10 GPM Gravity Trenches
2. Maximum is 45 GPM

Pressure Distribution

3. a. Select number of perforated laterals_____.
   b. Select perforation spacing = _____ft.
   c. Subtract 2 ft from rock layer length:
   _____ - 2 = _____ feet. (Length of Laterals)

ROCK LAYER LENGTH

   d. Determine the number of spaces between perfs:
   _____ / _____ = _____spaces
   (length of lateral) / (perf. spacing)
   e. _____spaces + 1 = _____perforations per lateral
   f. Multiply perforations per lateral by number of laterals to get total number of perforations:
   _____ x _____ = _____
   (perfs/lateral) x (laterals) = (perforations)
   g. _____ X _____ = _____GPM
   (Perforations) x (gpm/perfs)

SELECTED PUMP CAPACITY 10 to 20 **GPM**

B. Determine head requirements:

1. Elevation difference beteween pump & point of discharge:
   26 feet
2. If pumping to a pressure distribution system, add 5 feet; for gravity add zero: 0 feet
3. Friction Loss
   a. Enter friction loss table with GPM and pipe diameter. Read friction loss in feet per 100 ft in table.
   F.L. = _____ ft/100 of pipe
   b. Determine total pipe length from pump to discharge point. Add 25% to pipe length for fitting loss.
   85' length x 1.25 106 feet.
   c. Calculate total friction loss by multiplying friction loss in 100 ft. of pipe by equivalent pipe length (B):

Total friction loss = 106 x .73 /100 = 1 feet

4. Total head required is the sum of the elevation difference, special head requirements and total friction loss:

26 (1) + 0 (2) + 1 (3c) **TOTAL HEAD** 27

SELECT A PUMP TO DELIVER AT LEAST 10 **GPM WITH AT LEAST** 27 **FEET OF TOTAL HEAD.**

If laterals are connected to a header pipe in a pressure system, select the minimum size lateral diameter; enter the table with perforation spacing and the number of perforations per lateral.

Select minimum size of lateral _____

For a center manifold system the values will be ½ of above.

Perforation Discharges in GPM

Head (feet)	Perforation diameter (inches)	
	7/32	1/4
1.0a	0.56	0.74
1.5	0.69	0.90
2.0b	0.80	1.04

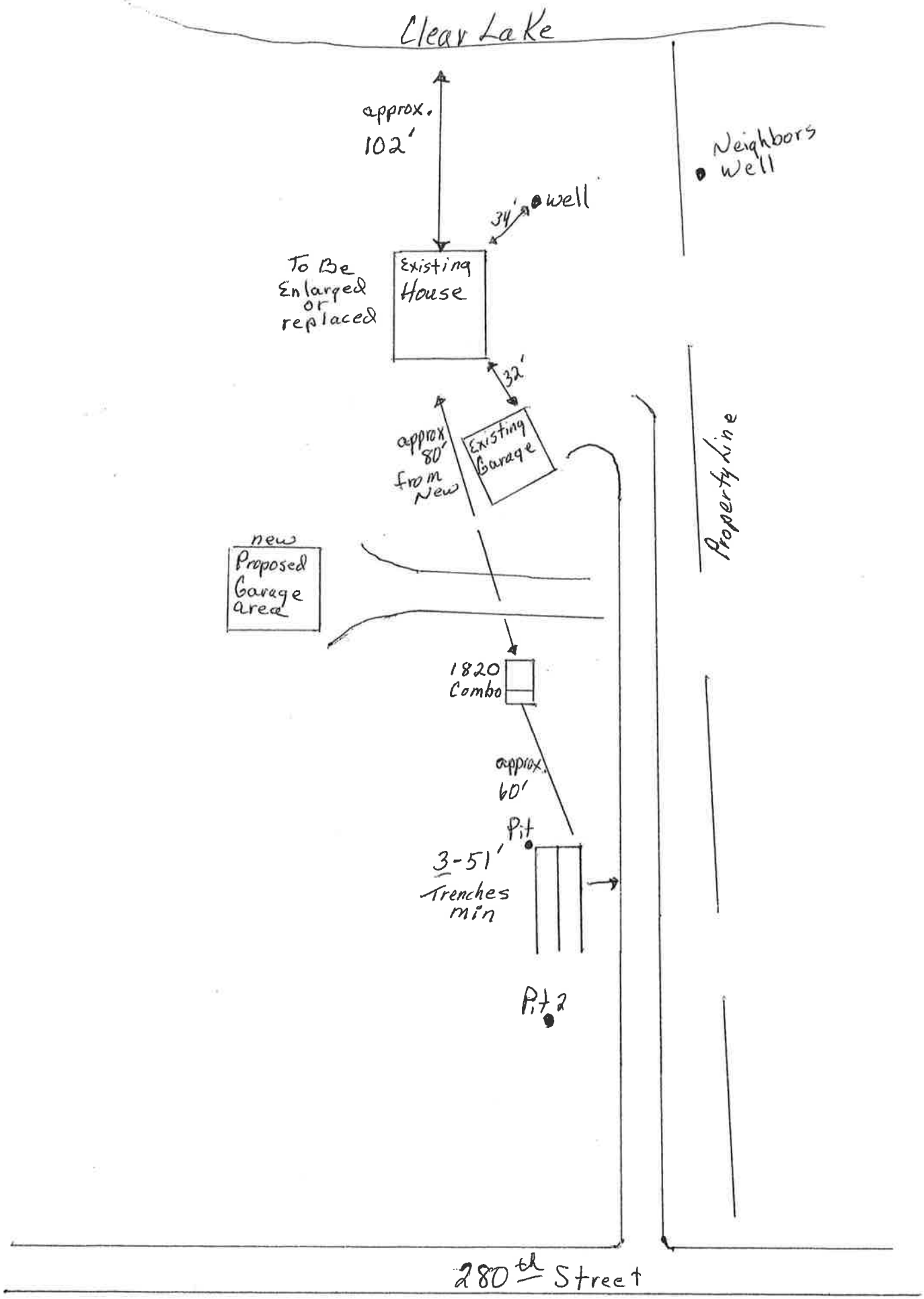
a. Use 1.0 foot single homes
b. Use 2.0 feet for anything else

FRICTION LOSS IN PLASTIC PIPE

Flow Rate GPM	1.5"	2"	3"
20	2.47	0.73	0.11
25	3.73	1.11	0.16
30	5.23	1.55	0.23
35	6.96	2.06	0.30
40	8.91	2.64	0.39
45	11.07	3.28	0.48
50	13.46	3.99	0.58
55		4.76	0.70
60		5.60	0.82
65		6.48	0.95
70		7.44	1.09

Max. No. of 1/4" perfs per lateral. (10%var)

Perforation spacing. (feet)	1 1/4"	1 1/2"`	2"
2.5 feet	14	18	28
3.0 feet	13	17	26
3.3 feet	12	16	25
4.0 feet	11	15	23
5.0 feet	10	14	22


Clear Lake
approx. 102'
Neighbors well
34'
well
To Be Enlarged or replaced
Existing House
32'
approx 80' from New
Existing Garage
Property Line
new Proposed Garage area
1820 Combo
approx. 60'
Pit
3-51' Trenches min
Pit 2
280th Street