

FIELD EVALUATION SHEET

PRELIMINARY EVALUATION DATE 7-5-22, FIELD EVALUATION DATE 8-7-22
PROPERTY OWNER: SHARON VOGT PHONE _____
ADDRESS: 20885 ST HWY 65 CITY, STATE, ZIP: MCGRATH MN 56350
LEGAL DESCRIPTION: ALL THAT PART OF NW-NW 1/4 W OF HWY 65
PIN# 25-0-013800 SEC 9 T 44 R 23 TWP NAME PLINY
FIRE# _____ LAKE/RIVER _____ LAKE CLASS _____ OHWL _____ FT.

DESCRIPTION OF SOIL TREATMENT AREAS

	AREA #1	AREA #2	REFERENCE BM ELEV. <u>100</u> FT.
DISTURBED AREAS	YES <u>NO</u> \	YES <u>NO</u> \	REFERENCE BM DESCRIPTION
COMPACTED AREAS	YES <u>NO</u> \	YES <u>NO</u> \	<u>GROUND LEVEL AT THE</u>
FLOODING	YES <u>NO</u> \	YES <u>NO</u> \	<u>DECIL POST ON THE</u>
RUN ON POTENTIAL	YES <u>NO</u> \	YES <u>NO</u> \	<u>SOUTH EAST CORNER OF</u>
SLOPE %	<u>0</u>	_____	<u>HOUSE</u>
DIRECTION OF SLOPE	<u>NONE</u>	_____	
LANDSCAPE POSITION	<u>TOP OF HILL</u>	_____	
VEGETATION TYPES	<u>FIELD</u>	_____	

DEPTH TO STANDING WATER OR MOTTLED SOIL: BORING# 1 _____, 1A _____, 2 _____, 2A _____

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

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

CONSTRUCTION RELATED ISSUES: 3 BEDROOM PRESSURE BED. SOIL CONDITIONS WERE TO DRY TO GET DOWN TO 4'. NICE SAND TO 33". WHEN WE GET BACKHDE ON LOCATION WE WILL DIG PITS TO VERIFY SOILS.

LIC# 127 SITE EVALUATOR SIGNATURE: Larry Liljequist

SITE EVALUATOR NAME: LARRY LILJEQUIST TELEPHONE# 218-820-8886

LUG REVIEW _____ DATE _____

Comments: _____

SOIL BORING LOGS ON REVERSE SIDE

SOILS CHARTS FOR BOTH PROPOSED AND ALTERNATE SITES

1 (PROPOSED) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-5	TOPSOIL	10YR 5/2
5-33'	SANDY LOAM LOOSE DRY	10YR 6/6

2 (PROPOSED) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-5	TOPSOIL	10YR 5/4
5-31'	SANDY LOAM LOOSE DRY	10YR 6/6

1 (ALTERNATE) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-4	TOPSOIL	10YR 5/2
4-26'	SANDY LOAM LOOSE	10YR 6/6

2 (ALTERNATE) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

ADDITIONAL SOIL BORINGS MAY BE REQUIRED

TRENCH AND BED WORKSHEET

1. AVERAGE DESIGN FLOW

- A. Estimated 450 gpd (see figure A-1)
 or measured $\times 1.5$ (safety factor) = gpd
 B. Septic tank capacity gal (see figure C-1)

2. SOILS (Site evaluation data)

- C. Depth to restricting layer = 5 ft
 D. Max depth of system Item 2C - 3 ft = 5 ft - 3 ft = 2 ft
 E. Texture SANDY LOAM Percolation rate 6-15 MPI
 F. Soil Sizing Factor (SSF) 1.77 sqft/gpd (see figure D-15)
 G. % Land Slope 0 %

3. TRENCH or BED BOTTOM AREA

- H. For trenches with 6 inches of rock below the pipe:
 $A \times F = \text{ } \text{ gpd} \times \text{ } \text{ sqft/gpd} = \text{ } \text{ sqft}$
 I. For trenches with 12 inches of rock below the pipe:
 $A \times F \times 0.8 = \text{ } \text{ gpd} \times \text{ } \text{ sqft/gpd} \times 0.8 = \text{ } \text{ sqft}$
 J. For trenches with 18 inches of rock below the pipe:
 $A \times F \times 0.66 = \text{ } \text{ gpd} \times \text{ } \text{ sqft/gpd} \times 0.66 = \text{ } \text{ sqft}$
 K. For trenches with 24 inches of rock below the pipe:
 $A \times F \times 0.6 = \text{ } \text{ gpd} \times \text{ } \text{ sqft/gpd} \times 0.6 = \text{ } \text{ sqft}$
 L. For gravity beds with 6 or 12 inches of rock below the pipe;
 $1.5 \times A \times F = 1.5 \times \text{ } \text{ gpd} \times \text{ } \text{ sqft/gpd} = \text{ } \text{ sqft}$
 For pressure beds with 6 or 12 inches of rock below the pipe;
 $A \times F = \text{450} \text{ gpd} \times \text{1.77} \text{ sqft/gpd} = \text{577} \text{ sqft}$

4. DISTRIBUTION (Check all that apply)

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

5. SYSTEM WIDTH, LENGTH and VOLUME

- M. Select trench width = 16 ft
 N. If using rock, divide bottom area by width: (H, I, J, K or L) ÷ M =
577 sqft ÷ 16 ft = 36 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)
(.5 ft + 0.5 ft) x 577 sqft = 577 cuft
 Volume in cubic yards = cuft ÷ 27
577 cuft ÷ 27 = 22 cu yds
 Weight of rock in tons = cubic yds x 1.4
22 cu yds x 1.4 = 31 tons
 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 height of chamber slats) ÷
 width of chamber in feet (M)
 sqft ÷ ft = lineal ft

6. LAWN AREA

- Q. Select trench spacing, center to center = feet
 R. Multiply trench spacing by lineal feet R x Q = sqft of lawn area
 ft x ft = sqft

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

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.

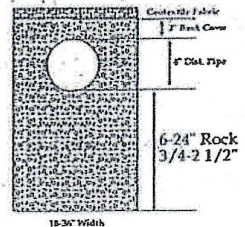
Number of Bedrooms	Minimum Liquid Capacity	Liquid capacity with garbage disposal	Liquid capacity with disposal & lift inside
2 or less	750	1125	1500
3 or 4	1000	1500	2000
5 or 6	1500	2250	3000
7, 8 or 9	2000	3000	4000

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	0.83
	Loamy sand	
	Fine sand	1.67
6 to 15	Sandy loam	1.27
16 to 30	Loam	1.67
31 to 45	Silt loam	2.00
	Silt	
46 to 60	Clay loam	2.20
	Sandy clay	
	Silty clay	
over 61 to 120***	Clay	4.20
	Sandy clay	
	Silty clay	
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

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



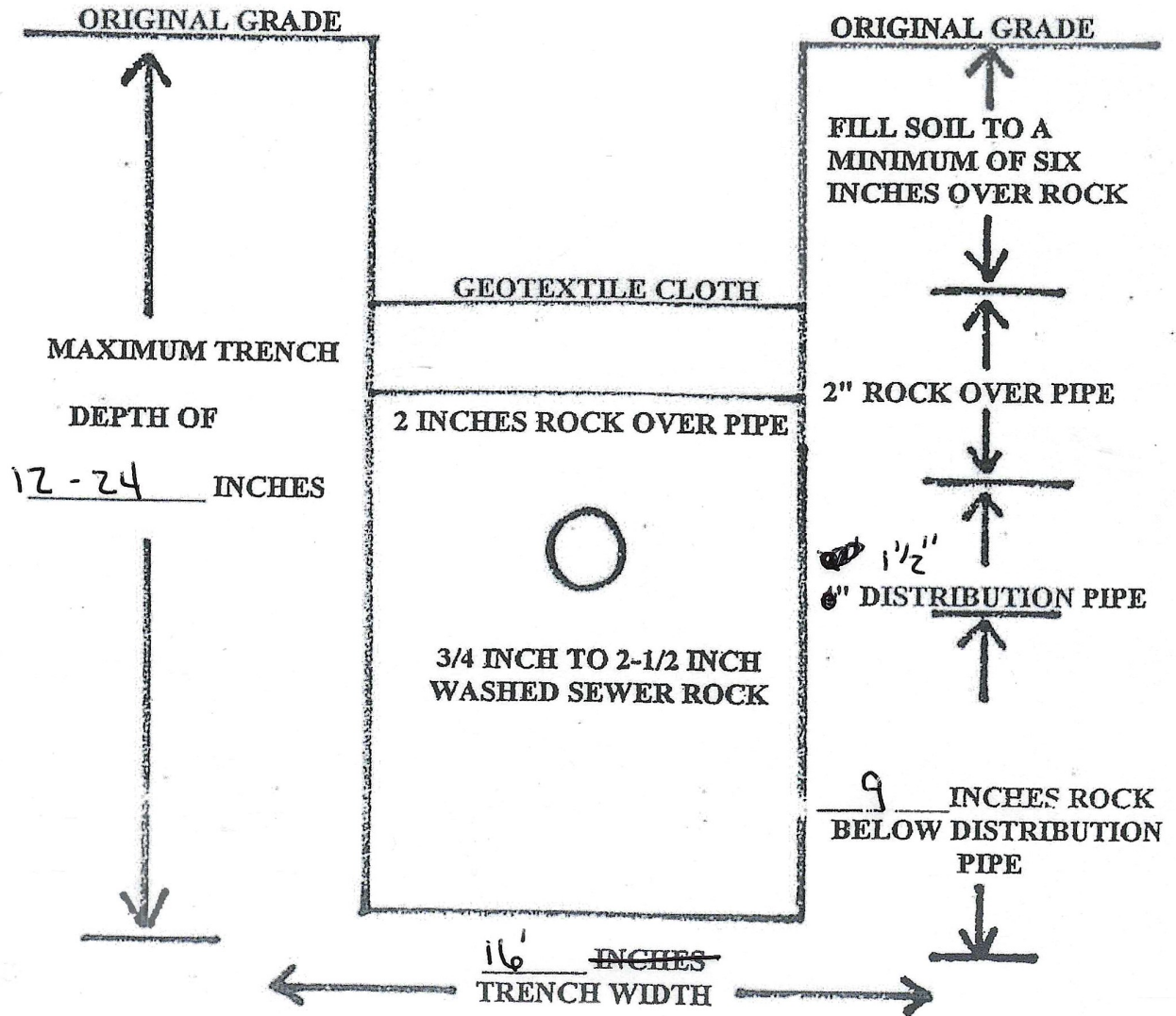
I hereby certify that I have completed this work in accordance with applicable ordinances, rules and laws.

Larry Lyngard (signature) 177 (license #) 8-7-22 (date)

TRENCH CROSS-SECTION

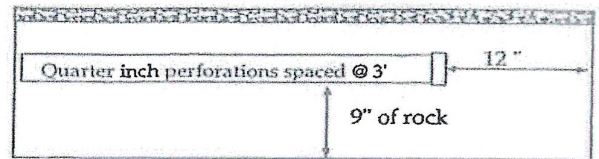
FINISHED GRADE

12 INCHES OF BACKFILL OVER ROCK



PRESSURE DISTRIBUTION SYSTEM

Geotextile fabric



Perf Sizing 3/16" - 1/4"
Perf Spacing 1.5' - 5'

E-4: Maximum allowable number of 1/4-inch perforations per lateral to guarantee <10% discharge variation

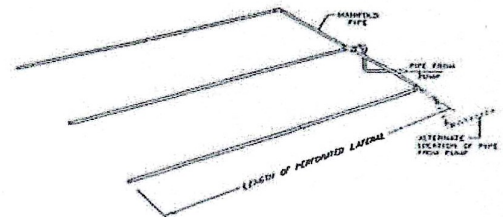
perforation spacing (feet)	1 inch	1.25 inch	1.5 inch	2.0 inch
2.5	8	14	18	28
3.0	8	13	17	26
3.3	7	12	16	25
4.0	7	11	15	23
5.0	6	10	14	22

E-6: Perforation Discharge in gpm

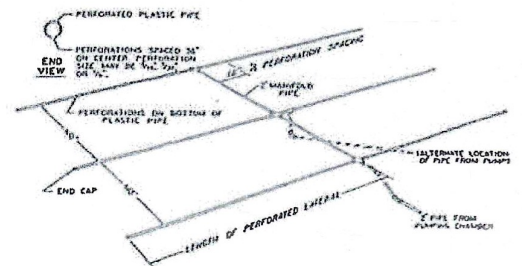
head (feet)	perforation diameter (inches)			
	1/8	3/16	7/32	1/4
1.0 ^a	0.18	0.42	0.56	0.74
2.0 ^b	0.26	0.59	0.80	1.04
5.0	0.41	0.94	1.26	1.65

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

MANIFOLD LOCATED AT END OF PRESSURE DISTRIBUTION SYSTEM



LAYOUT OF PERFORATED PIPE LATERALS FOR PRESSURE DISTRIBUTION IN MOUND



- Select number of perforated laterals 5
- Select perforation spacing = 3 ft
- Since perforations should not be placed closer than 1 foot to the edge of the rock layer (see diagram), subtract 2 feet from the rock layer length.

$$\frac{36}{\text{Rock layer length}} - 2 \text{ ft} = \underline{34} \text{ ft}$$

- Determine the number of spaces between perforations. Divide the length (3) by perforation spacing (2) and round down to nearest whole number.
Perforation spacing = 34 ft ÷ 3 ft = 11 spaces
- Number of perforations is equal to one plus the number of perforation spaces(4). Check figure E-4 to assure the number of perforations per lateral guarantees <10% discharge variation.

$$\underline{11} \text{ spaces} + 1 = \underline{12} \text{ perforations/lateral}$$

- A. Total number of perforations = perforations per lateral (5) times number of laterals (1)

$$\underline{12} \text{ perfs/lat} \times \underline{5} \text{ lat} = \underline{60} \text{ perforations}$$

- B. Calculate the square footage per perforation. Should be 6-10 sqft/perf. Does not apply to at-grades.

Rock bed area = rock width (ft) x rock length (ft)

$$\underline{16} \text{ ft} \times \underline{36} \text{ ft} = \underline{576} \text{ sqft}$$

Square foot per perforation = Rock bed area ÷ number of perfs (6)

$$\underline{576} \text{ sqft} \div \underline{60} \text{ perfs} = \underline{9.6} \text{ sqft/perf}$$

- Determine required flow rate by multiplying the total number of perforations (6A) by flow per perforation (see figure E-6)

$$\underline{60} \text{ perfs} \times \underline{.56} \text{ gpm/perfs} = \underline{33.6} \text{ gpm}$$

- If laterals are connected to header pipe as shown on upper example, to select minimum required lateral diameter; enter figure E-4 with perforation spacing (2) and number of perforations per lateral (5) Select minimum diameter for perforated lateral = 1.25 inches.

- If perforated lateral system is attached to manifold pipe near the center, lower diagram, perforated lateral length (3) and number of perforations per lateral (5) will be approximately one half of that in step 8. Using these values, select minimum diameter for perforated lateral = _____ inches.

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

Larry Lyngul

(signature)

177

(license #)

8-7-22

(date)

PUMP SELECTION PROCEDURE

1. Determine pump capacity:

A. Gravity distribution

1. Minimum required discharge is 10 gpm
2. Maximum suggested discharge is 45 gpm. For other establishments at least 10% greater than the water supply rate, but no faster than the rate at which effluent will flow out of the distribution device.

B. Pressure distribution

See pressure distribution work sheet

From A or B Selected pump capacity: 33.6 gpm

2. Determine pump head requirements:

A. Elevation difference between pump and point of discharge?

14 feet

B. Special head requirement? (See Figure at right - Special Head Requirements)

5 feet

C. Calculate Friction loss

1. Select pipe diameter 2 in

2. Enter Figure E-9 with gpm (1A or B) and pipe diameter (C1).

Read friction loss in feet per 100 feet from Figure E-9

Friction Loss = 2.06 ft/100ft of pipe

3. Determine total pipe length from pump discharge to soil treatment discharge point. Estimate by adding 25 percent to pipe length for fitting loss. Total pipe length times 1.25 = equivalent pipe length

98 feet x 1.25 = 122.5 feet

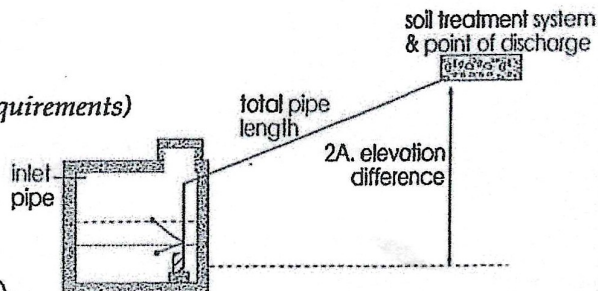
4. Calculate total friction loss by multiplying friction loss (C2) in ft/100 ft by the equivalent pipe length (C3) and divide by 100.

= 2.06 ft/100ft x 122.5 ÷ 100 = 2.52 ft

D. Total head required is the sum of elevation difference (A), special head requirements (B), and total friction loss (C4)

14 ft + 5 ft + 2.52 ft =

Total head: 21.52 feet



Special Head Requirements	
Gravity Distribution	0 ft
Pressure Distribution	5 ft

flow rate gpm	E-9: Friction Loss in Plastic Pipe Per 100 feet		
	nominal pipe diameter		
	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	<u>2.06</u>	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

3. Pump selection

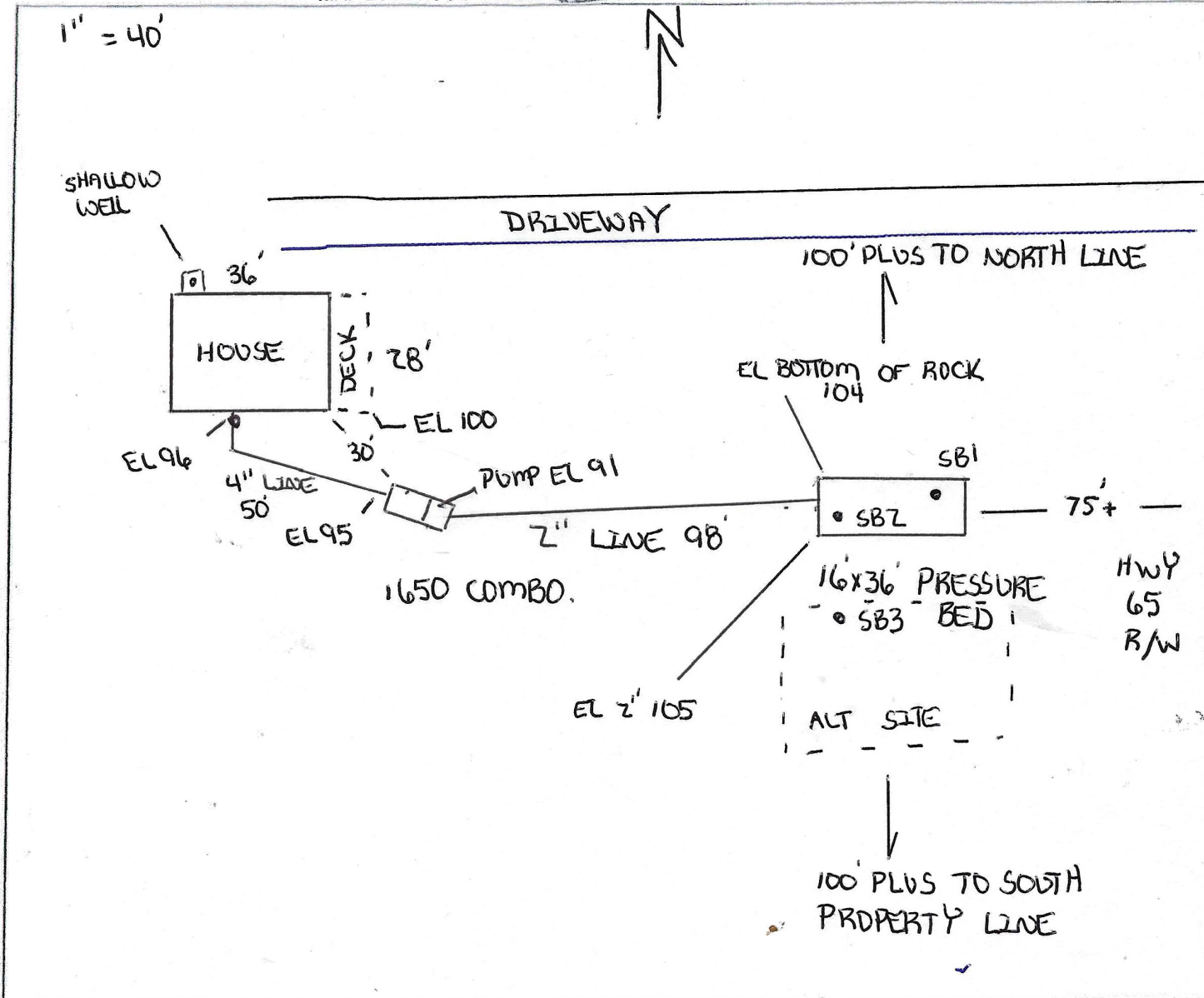
A pump must be selected to deliver at least 33.6 gpm (1A or B) with at least 21.52 feet of total head (2D)

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

Larry Lyngquist (signature) 127 (license #) 8-7-22 (date)

MAP DRAWN TO SCALE WITH A NORTH ARROW

1" = 40'



CHECK OFF LIST--HAVE ALL OF THE FOLLOWING BEEN DRAWN ON THE MAP??

SHOW EXISTING OR PROPOSED

- WATER WELLS WITHIN 100 FT OF TREATMENT AREAS
- PRESSURE WATER LINES WITHIN 10 FT OF TREATMENT AREAS
- STRUCTURES
- ALL SOIL TREATMENT AREAS
- HORIZONTAL AND VERTICAL REFERENCE
- POINT OF SOIL BORINGS
- LOT EASEMENTS
- DISTURBED/ COMPACTED AREAS
- SITE PROTECTION--LATHE AND RIBBON EVERY 15 FT
- ACCESS ROUTE FOR TANK MAINTENANCE
- REQUIRED SETBACKS
- STRUCTURES
- OHWL
- LOT IMPROVEMENTS
- ALL ISTS COMPONENTS
- DIRECTION OF SLOPE
- ALL LOT DIMENSIONS
- PROPERTY LINES

COMMENTS:

DESIGNER SIGNATURE Larry Lyngstad
 LICENSE# 127

INDICATE ELEVATIONS

- BENCHMARK 100 CORNER POST SE.
- ELEVATION OF SEWER LINE @ HOUSE 96
- ELEVATION @ TANK INLET 95
- ELEVATION @ BOTTOM OF ROCK LAYER 104
- ELEVATION @ BOTTOM OF BORING OR RESTRICTIVE LAYER 102.5
- ELEVATION OF PUMP 91
- ELEVATION OF DISTRIBUTION DEVICE 105

DATE 8-7-22

Subsurface Sewage Treatment System Management Plan

Property Owner: SHARON VOGT Phone: _____ Date: 8-7-22
Mailing Address: 20885 ST HWY 65 City: MCGRATH Zip: 56350
Site Address: SAME AS ABOVE City: _____ Zip: _____

This management plan will identify the operation and maintenance activities necessary to ensure long-term performance of your septic system. Some of these activities must be performed by you, the homeowner. Other tasks must be performed by a licensed septic service provider or maintenance provider.

System Designer: Recommends SSTS check every _____ months.

Local Government: Recommends SSTS check every _____ months.

State Requirement: Requires SSTS check every 36 months.

(State requirements are based on MN Rules Chapter 7080.2450, Subp. 2 & 3)

**My System needs to be checked
every _____ months.**

Homeowner Management Tasks:

Leaks – Check (look, listen) for leaks in toilets and dripping faucets. Repair leaks promptly.

Surfacing sewage – Regularly check for wet or spongy soil around your soil treatment area.

Effluent filter – *Inspect and clean twice a year or more:*

Alarms – Alarm signals when there is a problem. Contact a service or maintenance provider any time an alarm signals.

Event counter or water meter – Record your water use.

-recommend meter readings be conducted (circle one: DAILY WEEKLY MONTHLY N/A)

Licensed septic service provider or maintenance provider (Check all that apply):

- Check to make sure tank is not leaking
- Check and clean the in-tank effluent filter (if exists)
- Check the sludge/scum layer levels in all septic tanks
- Recommend if tank should be pumped
- Check inlet and outlet baffles
- Check the drainfield effluent levels in the rock layer
- Check the pump and alarm system functions
- Check wiring for corrosion and function
- Check dissolved oxygen and effluent temperature in tank
- Provide homeowner with list of results and any action to be taken
- Flush and clean laterals if cleanouts exist

"I understand it is my responsibility to properly operate and maintain the sewage treatment system on this property, utilizing the Management Plan. If requirements in the Management Plan are not met, I will promptly notify the permitting authority and take necessary corrective actions. If I have a new system, I agree to adequately protect the reserve area for future use as a soil treatment system."

Property Owner Signature: _____ Date: _____

Designer Signature: Larry Lyngul Date: 8-7-22

See Reverse Side for Management Log

Maintenance Log

Activity	Date Accomplished									
<i>Check frequently:</i>										
Leaks: check for plumbing leaks										
Soil treatment area check for surfacing										
Lint filter: check, clean if needed										
Effluent screen: if owner-maintained										
Water usage rate (monitor frequency _____)										
<i>Check annually:</i>										
Caps: inspect, replace if needed										
Sludge & Scum/Pump										
Inlet & Outlet baffles										
Drainfield effluent leaks										
Pump, alarm, wiring										
Flush & clean laterals if cleanouts exists										
Other: _____										
Other: _____										

Notes: _____
