

Pressure Bed Design

Property Owner: **Michael & Rebekah Sund** Date: **4/24/2024**

Site Address: **not assigned yet.** PID: **29-1-272900**

Comments: _____

Instructions: = enter data = adjust if desired = computer calculated - DO NOT CHANGE!

- 1) 2 bedroom Type I Residential System
- 2) 300 GPD design flow
- 3) No Garbage disposal or pumped to septic
- 4) 1000 Gal Septic tank (code minimum) 1000 Gal Septic tank (design size / LUG req'd)
 Tank options: none
- 5) 0.78 GPD/ft² Soil Loading Rate 385 ft² bed (code minimum) 385 ft² (design size / LUG req'd)
 (must match soil boring log)
- 6) 10.0 ft desired bed width, leads to a 38.5 ft bed length
 (25' maximum)
- 7) 3.0 ft lateral spacing 3.0 ft perforation spacing (maximum 3 for both)
 end feed manifold connection
- 8) 3 laterals 36.5 feet long 13.0 perfs / lateral 39 perfs total
 (1/2 perf means the first perf starts at the middle feed manifold)
- 9) 1/4" inch perfs at 1 feet residual head gives 0.74 gpm flow rate per perforation
 (If bed has > 1' of cover, increase residual head for cleanout req's)
 for this perf size & spacing, & pipe size on line 12, max perfs/lateral = 25 , line #8 must be less --> OK
- 10) 4.0 doses per day (4 minimum)
- 11) 75 gallons per dose (treatment volume)
- 12) 2.00 inch diameter laterals must be used to meet "4x pipe volume" requirement
- 13) 50 feet of 2.0 inch supply line leads to 9 gallons of drainback volume
 (Tip: "top feed" manifold to control the drainback)
- 14) 84 gallons TOTAL pump out volume (treatment + drainback)
- 15) 6 feet vertical lift from pump to drainfield laterals, leads to a
- 16) 29 GPM @ 13 feet of head, Pump requirement
 (>50 gpm may require additional 3-6' head allowance for discharge assembly)

17) 500 gal Dose tank (code minimum) 500 gal Dose tank (design size / LUG req'd) at 15.00 gpi

leads to a:

Optional Time dosing of:

- 18) 5.6 inch swing on Demand float, (this delivers Average flow, =70% of Peak design flow)
- 19) 12 inches from bottom of tank to "pump OFF" float 2.9 min ON
- 20) 18 inches from bottom of tank to "pump ON" float 8.5 hrs OFF
- 21) 21 inches from bottom of tank to "Hi Level" float 12 inches to "timer ON" float
- 22) 185 gallons reserve capacity (after HLA activation-demand dosed) 31 inches to "Hi Level" float

23) 48 inches, or 4.00 ft. to Redox or other limiting condition (This must match the soil boring log)
Treatment zone contains 0 inches of 0% soil credit, and 0 inches of 50% soil credit

24) 36 inches, or 3.00 ft. of vertical separation required

leads to bottom of rock no more than:

25) 12 inches, or 1.0 ft. Below existing grade **CRITICAL FOR FUTURE CERTIFICATIONS!!!**

26) 6 inches of rock below the pipe

2 inches of rock to cover the pipe

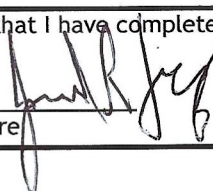
27) Overall Dimensions: 10.0 ft. wide by 38.5 ft. long Pressure Bed

28) Rock Bed materials:

10 ft. by 38.5 ft. by 12 inches total, plus 20% gives 18 yd³ or *1.4= 25 ton

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

Jarold R. Farley
Designer Signature



Farley Sewer Systems
Company

L-1919
License#

4/24/2024
Date

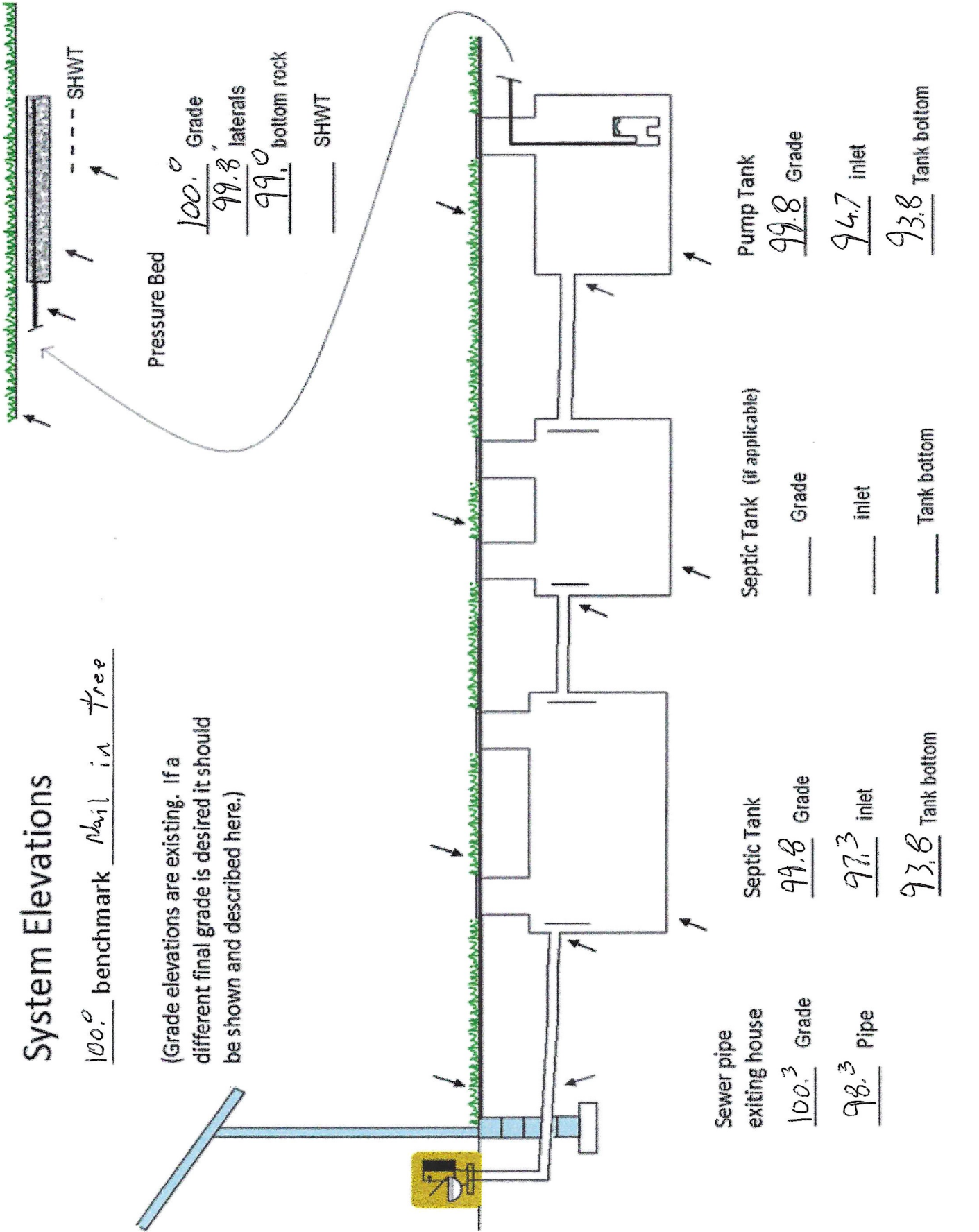
INSPECTOR CHECKLIST - Pressure bed

- not assigned yet.
- WELL setbacks: 20' -50' to sewer line req's MDH pressure test form (5 psi for 15 min)
50' to everything 100' to drainfield with shallow well
- PROPERTY LINES setback: 10' to everything
- Road setback: platted: 10' prop line. Metes & bounds: out of road easement, or outer ditch.
- LAKE / BLUFF setback: 20' for bluff. Lakes: GD ____, RD ____, NE _____. Protected wetland ____.
- Building setbacks: 10' for everything, 20' for dispersal area.
- WATER LINE under pressure 10' to bed, tank & sewer line. (else sewer line > 12" below)
- Sewer line & tank connection (no hard 90's, long sweep 90 or 2-45's, minimum slope 1" in 8' = 1%)
(no depth req's, clean out every 100', Sch 40 pipe)
- Septic tank and risers (water tight risers, baffles, insulated, proper depth, existing verified by pumping)
mfg _____ 1000 gallons none _____
- Riser over outlet, riser over inlet or center, and 6"+ inspection pipe over any remaining baffles.
- No _____ effluent filter & alarm
- Dose tank, risers and piping (water tight risers, insulated, proper depth, drainback)
mfg _____ 500 gallons
- dose pump _____ 29 gpm 13 head VERIFY PUMP CURVE
- Optional Time dosing of:
 2.9 min ON 8.5 hr OFF
- verify that installed "vertical lift from pump to laterals" is no more than design value of 6 feet
- float setting drop 5.6 inches at 15.00 gpi "DESIGNED" 3.8 inches approx float tether length
- 84.0 gal dose divided by _____ gpi "INSTALLED" = _____ inches float drop (field corrected)
- LABEL pump requirements and drawdown on riser or panel
- Cam lock reachable from grade - 30" max. J-hook weep hole. Supply line access (no hard 90's)
- 2.0 inch supply pipe: Sch40, sloped 1/8"+, supported by 4" sch40 sleeve or compacted, and buried 6"+.
- splice box / control panel / electrical connections / Hi Level Alarm
- flow measurement: CT, ETM, time dosed, home water meter
- Bed dimensions 10 X 38.5
- Rock depth below pipe 6 inches
- Rock bottom elevation 12.0 inches from Grade to bottom of rock (max)
- cover depth of 12"+ VERIFY
- 3 laterals (1-2' from edge of rock)
- 2.00 inch pipe size (Sch40 pipe & fittings)
- 3.0 ft lateral spacing
- 1/4" inch perforations
- 3.0 ft perforation spacing
- Air inlet at end of laterals, and at top feed manifold if necessary. VERIFY
- clean outs (deep bed 2' of head) (no hard 90's)
- 4" inspection pipe to bottom of rock, anchored VERIFY
- Abandon existing system - if necessary Re-use existing tank certification
- monitoring plan and type _____
- well abandonment form - if necessary

System Elevations

100.0 benchmark Nail in tree

(Grade elevations are existing. If a different final grade is desired it should be shown and described here.)



Sewer pipe exiting house
100.3 Grade
98.3 Pipe

Septic Tank
99.8 Grade
97.3 inlet
93.8 Tank bottom

Septic Tank (if applicable)
 _____ Grade
 _____ inlet
 _____ Tank bottom

Pump Tank
99.8 Grade
94.7 inlet
93.8 Tank bottom

Pressure Bed
100.0 Grade
99.8 laterals
99.0 bottom rock
 _____ SHWT

Installer Summary

1000 gallon Septic tank (minimum) Tank options: none

500 gallon Dose tank (minimum) at 15.00 gpi

29 GPM @ 13 ft. of head, Pump required

5.6 inch swing on Demand float which translates to roughly 3.8 inches of float tether length

Optional Time dosing of:

2.9 minutes ON

8.5 hours OFF

18 inches from bottom of tank to "pump ON" float

12 inches to "timer ON" float

21 inches from bottom of tank to "Hi Level" float

31 inches to "Hi Level" float

50 ft. of 2.0 inch supply line with end feed manifold connection

3 laterals 2.00 inch diameter 36.5 feet long 3.0 ft lateral spacing
1st and last laterals are 2 ft. from the sides of the bed

1/4" inch perfs 3.0 ft perforation spacing

No Effluent filter & alarm

3 clean out & valve box assembly

Pressure Bed:

10.0 ft. wide by 38.5 ft. Long

Bottom of rock no more than:

12 inches, or 1.0 ft. Below existing grade

6 inches of rock below the pipe

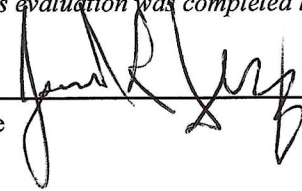
Overall Dimensions: 10 ft. wide by 38.5 ft. long Pressure Bed

Rock Bed materials: 18 yd³ or *1.4= 25 ton

Soil Information

		Evidence of site:	
		Cut	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Filled	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Compacted	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Disturbed	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Original soils	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Soil logs completed and attached	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Perk test completed and attached (if applicable)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Soil loading rate (gpd/ft ²)	<u>0.78</u>	Percolation rate (if applicable)	_____
Depth/elev to SHWT	<u>48.00</u>	Flooding or run-on potential (comments)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth to system bottom maximum (or elev minimum)	<u>12.00</u>	Flood elevation (if applicable)	_____
Depth/elev to standing water (if applicable)	_____	Elevation of ordinary high water level (if applicable)	_____
Depth/elev to bedrock (if applicable)	_____	Floodplain designation and elev - 100 yr/10 yr (if applicable)	_____
Soil Survey information determined (see attachment)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Differences between soil survey and field evaluation (if applicable)	_____ _____		

I hereby certify this evaluation was completed in accordance with MN 7080 and any local req's.

Jarold R. Farley

 Designer Signature

Farley Sewer Systems

 Company

L-1919

 License #

Preliminary & Field Evaluation Form

Owner Information

Date 4/24/2024 Sec / Twp / Rng _____
Parcel ID 29-1-272900 LUG (county, city, township) _____
Property Owner: Michael & Rebekah Sund Owners address (if different) _____
Property Address: not assigned yet. _____
City / State / Zip: _____

Flow Information and Waste Type / Strength

Estimated Design flow 300 Anticipated Waste strength Hi Strength Domestic
Comments: Any Non-Domestic Waste Yes (class V) No
Sewage ejector/grinder pump Yes No
Water softener Yes No
Garbage Disposal Yes No
Daycare / In home business Yes No

Site Information

Existing & proposed lot improvements located (see site map) Yes No Well casing depth to be drilled deep
Easements on lot located (see site map) Yes No Drainfield w/in 100' of residential well Yes No
Property lines determined (see site map) Yes No Site w/in 200' of transient noncommunity water supply (TNCWS) Yes No
Req'd setbacks determined (see site map) Yes No Site w/in an inner wellhead mgmt zone (CWS/NTNCWS) Yes No
Utilities located & identified (gopher state one call) Yes No Buried water supply pipe w/in 50' of system Yes No
Access for system maintenance (shown on site map) Yes No Site located in Shoreland (w/in 1000' of lake, 300' of river) Yes No
Soil treatment area protected Yes No Site map prepared with previous items included Yes No

Construction related issues _____

Soil Observation Log

Owner Information

Property Owner / project:	<u>Michael & Rebekah Sund</u>	Date	<u>4/24/2024</u>
Property Address / PID:	<u>not assigned yet.</u>		

Soil Survey Information refer to attached soil survey

Parent matl's:	<input checked="" type="checkbox"/> Till	<input type="checkbox"/> Outwash	<input type="checkbox"/> Lacustrine	<input type="checkbox"/> Alluvium	<input type="checkbox"/> Organic	<input type="checkbox"/> Bedrock
landscape position:	<input type="checkbox"/> Summit	<input checked="" type="checkbox"/> Shoulder	<input type="checkbox"/> Side slope	<input type="checkbox"/> Toe slope		
soil survey map units:	<u>menahga-loamy Sand</u>		slope <u>1</u> %	direction- <u>downhill</u>		

Soil Log #1

	<input checked="" type="checkbox"/> Boring <input type="checkbox"/> Pit	Elevation <u>100</u>	Depth to SHWT <u>n/a</u>				
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0-5"	top soil-loam	<u>35</u> 35 - 50 >50	10 yr 3/2		loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
5-20"	sandy loam	<u>35</u> 35 - 50 >50	10 yr 4/4		loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
20-48"	med. Sand	<u>35</u> 35 - 50 >50	10 yr 4/4		loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
		<35 35 - 50 >50	<i>I hit Rocks @ 48" and stopped there.</i>		loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive

Comments:

not assigned yet. Soil Log #2							
		<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation <u>100</u>	Depth to SHWT <u>n/a</u>		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0-6"	top soil-loam	<u><35</u> 35 - 50 >50	10 yr 3/2		<u>loose</u> friable firm rigid	<u>loose</u> weak moderate strong	<u>single grain</u> granular blocky prismatic platy massive
6-21"	sandy loam	<u><35</u> 35 - 50 >50	10 yr 4/4		<u>loose</u> friable firm rigid	<u>loose</u> weak moderate strong	<u>single grain</u> granular blocky prismatic platy massive
21-48"	med. Sand	<u><35</u> 35 - 50 >50	10 yr 4/6		<u>loose</u> friable firm rigid	<u>loose</u> weak moderate strong	<u>single grain</u> granular blocky prismatic platy massive
		<35 35 - 50 >50	Rock @ 48"		loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive

not assigned yet. Soil Log #3							
		<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation <u>100</u>	Depth to SHWT <u>n/a</u>		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0-4"	top soil-loam	<u><35</u> 35 - 50 >50	10 yr 3/2		<u>loose</u> friable firm rigid	<u>loose</u> weak moderate strong	<u>single grain</u> granular blocky prismatic platy massive
4-19"	sandy loam	<u><35</u> 35 - 50 >50	10 yr 4/4		<u>loose</u> friable firm rigid	<u>loose</u> weak moderate strong	<u>single grain</u> granular blocky prismatic platy massive
19-48"	med. sand	<u><35</u> 35 - 50 >50	10 yr 4/4		<u>loose</u> friable firm rigid	<u>loose</u> weak moderate strong	<u>single grain</u> granular blocky prismatic platy massive
		<35 35 - 50 >50	Rock @ 48"		loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive

I hereby certify this work was completed in accordance with MN 7080 and any local req's.

Jarold R. Farley
Designer Signature

Farley Sewer Systems
Company

L-1919
License #

LUG soil verify Signature

+

Lug media elev/depth Signature

= Soil Separaton Report

FARLEY SEWER SYSTEMS

SEWER DESIGN & INSTALLATION

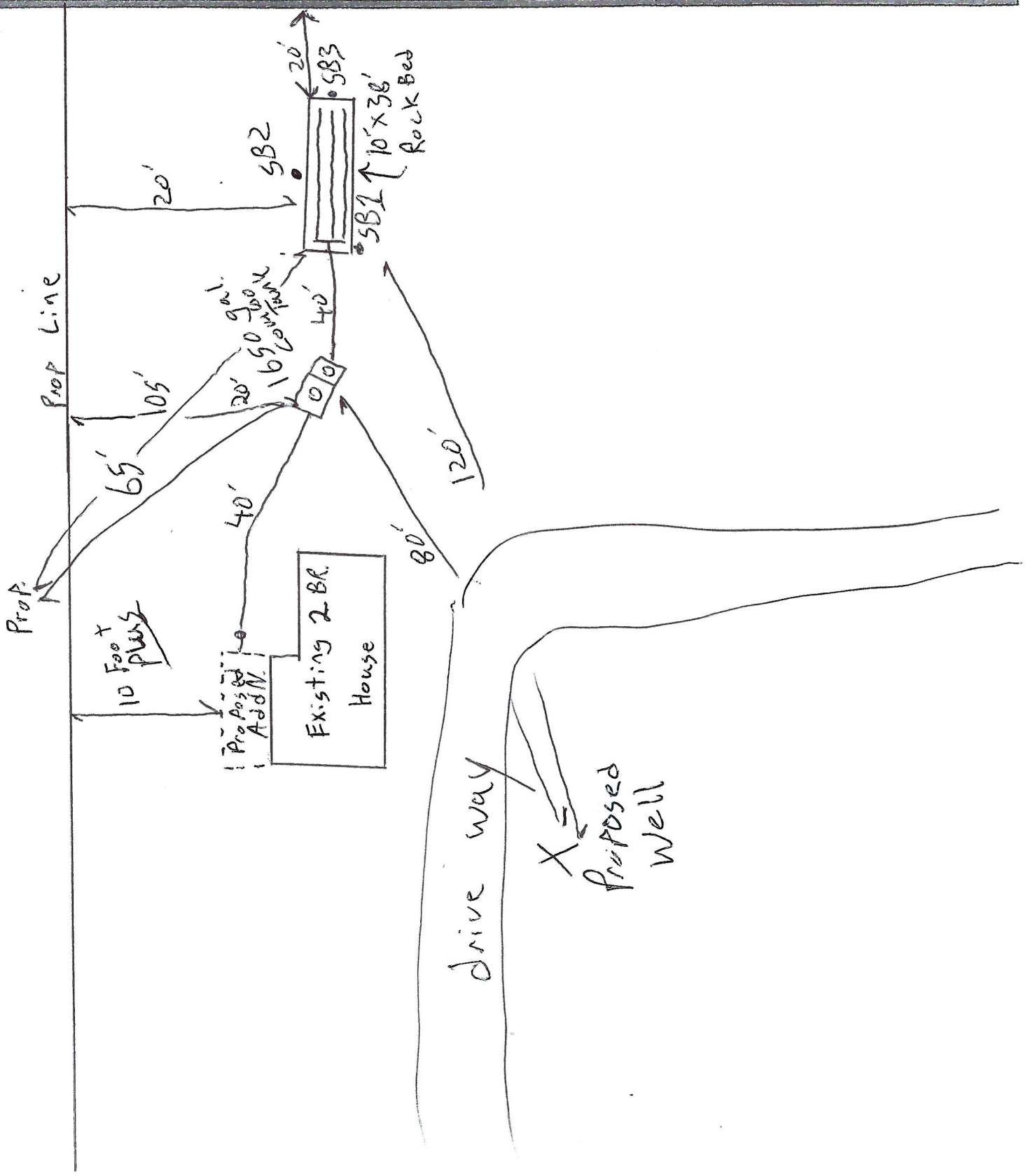
JAROLD R. FARLEY

P.O. Box 472
McGregor, MN 55760

Bus. Lic. No. L1919
Reg. No. 4744

218-839-4737 cell

X Shallow Well with hand
N Pump on it on Neighbors



Owners Septic System Management Plan

Date: 4/24/2024

Property Address: not assigned yet.

Septic Systems can be an expensive investment, good maintenance will ensure they last a lifetime. The purpose of a septic system is to properly "decompose" the pollutants before the water is recycled back into the groundwater. If you're not taking this seriously, ask yourself where your well water comes from.

Your septic design lists all the components of your system and their location. Keep the design, this management plan and the UofM "Septic System Owners Guide" in a safe place for future reference. For a copy of the Owners guide call the University of MN at 1-800-876-8636.

Some of the following tasks you can do yourself, some require a professional, but is it YOUR responsibility to see that it gets done.

Homeowner Tasks

- Do your best to conserve water. Don't overload your septic with multiple large water uses at the same time or on the same day.
- Fix household leaks promptly (leaky toilet, dripping faucets).
- Limit bleach and anti-bacterial products. Use Biodegradable dishwasher detergent.
- Consider a lint filter on your clothes washer.
- Regularly check for wet or spongy soil around your drainfield.
- Have a septic professional check your tanks every 3 years to determine if they need pumping.
- If you have a septic tank filter (effluent filter) clean it on a regular basis (or have a professional do it).
- If a septic alarm goes off, call your septic professional to diagnose the problem.
- Notify the County/City/Township when this management plan is not being met.
- Be aware of and protect your secondary drainfield site.

Professional Tasks

- Disclose the location of the secondary drainfield (if applicable).
- Respond to alarms and diagnose problems as needed.
- Review water use with the owner, check for a "soggy" drainfield.
- Pump the septic tanks as needed and ensure they are in proper working order.
- Verify the pump, dose amount, HI Level Alarm & drainback are all working properly.

"As the owner, I understand it is my responsibility to properly operate and maintain this septic system".

Property Owner Signature: X Michael D Sund

Date 4/24/2024