



MPCA# 1023
8291 140th Street
Milaca, MN 56353
320-983-6622

3/15/24

Owner: Tom and Amy Lorentz

Project Address: 41142 53rd Street, Foley, MN
PID: 14.0261.000

Septic Design

This septic system is designed for a 2 Bedroom Class I home with no garbage disposal and is in accordance with MPCA Chapter 7080 codes and all codes of Morrison County. Owners must not exceed 300 gallons per day.

The soils on this site are a Sandy loam. Mottled soil was located in the proposed treatment area at 18 inches. The primary site will be in the area of soil observations #1, #2 and #3. This will be a type 1 mound system which will need to be 250 sq ft leading to a 10'x 25' rock bed, 6" of rock below the pipe and a 18" sand lift. A 1000 gallon septic tank and a 500 gallon lift tank will need to be installed. Pump selected must produce at least 18 gpm at 16 feet of head. Clean-outs and irrigation boxes will be installed at the end of the laterals.

Contractor will need to verify that all setbacks from buildings are met. It will be the responsibility of the homeowner to verify all property lines and wells before construction begins. Keep all heavy equipment off area before and after construction of system.

In new construction applications, it is strongly recommended to pump the septic tank within 6 months after move in date to ensure that all bacteria killing chemicals are removed from the system. Standard maintenance pumping of septic tank every 2 years will ensure that this septic system will continue to perform as it was designed.

Johnson Septic Service

1000/500 tank with a 250 sqft Type I mound (18" sandlift)

Owners Septic System Management Plan

Date: 3/15/2024

Property Address: 41142 53rd Street, Foley, Mn

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

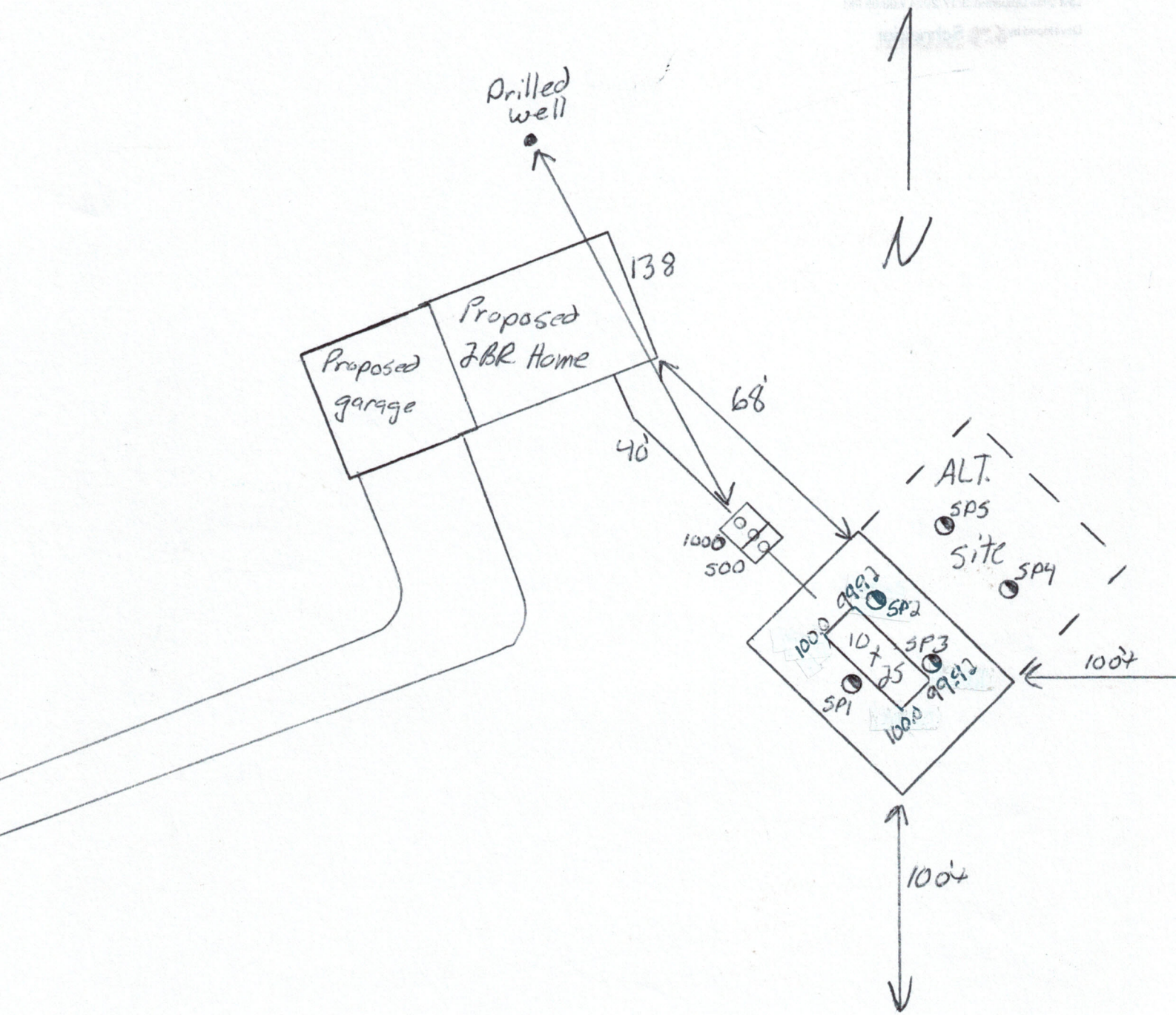
- Do your best to conserve water. Don't overload your septic with multiple large water uses at the same time or on the same day.
- Fix household leaks promptly (leaky toilet, dripping faucets).
- Limit bleach and anti-bacterial products. Use Biodegradable dishwasher detergent.
- Consider a lint filter 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

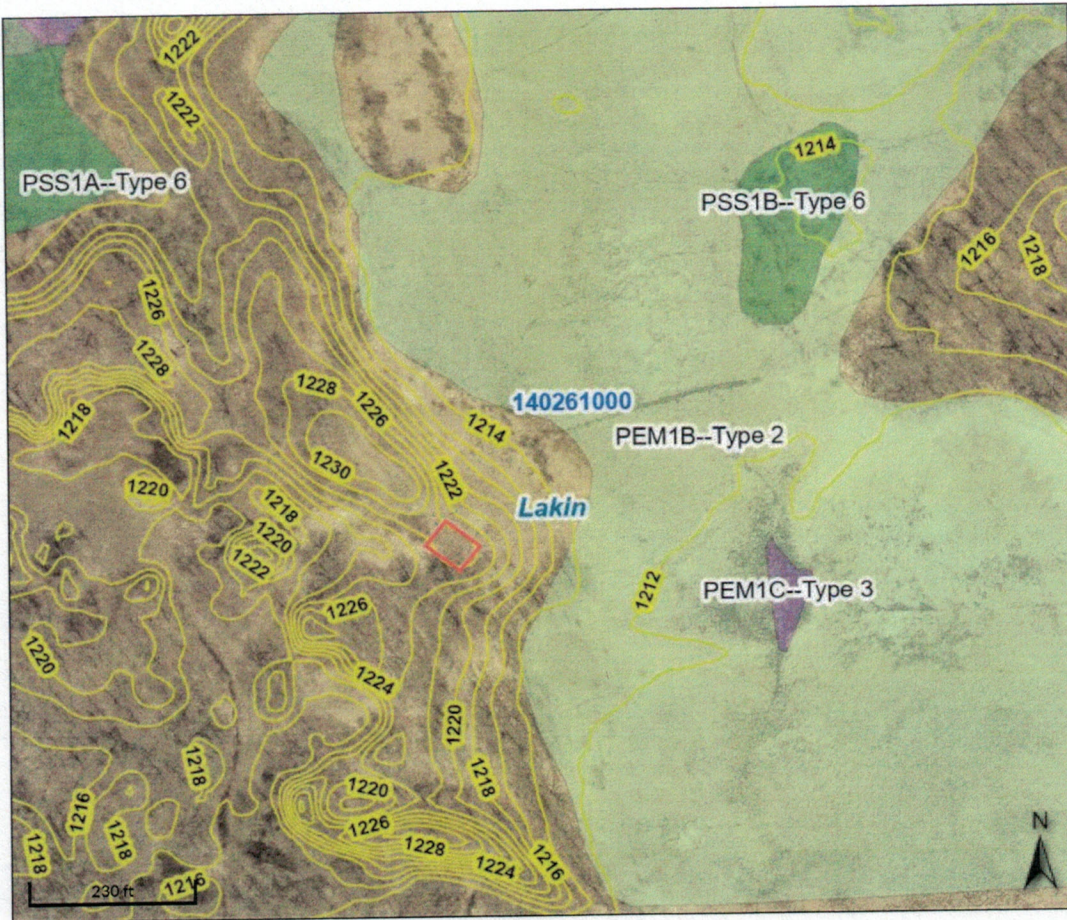
- Disclose the location of the secondary drainfield (if applicable).
- Respond to alarms and diagnose problems as needed.
- Review water use with the owner, check for a "soggy" drainfield.
- Pump the septic tanks as needed and ensure they are in proper working order.
- Verify the pump, dose amount, HI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

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

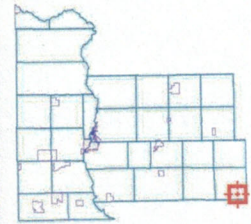
Property Owner Signature: _____ **Date** _____



Bottom of R.B. 101.5



Overview



Legend

-  Corporate Limits
-  Political Townships
-  Parcels
- Road Centerlines**
-  US/State Hwy
-  CSAH; County Road
-  Township
-  Roads
-  Elevation Contours
- Flood Plain**
-  IN
-  OUT, 500yr
- National Wetland Inventory**
-  1
-  2
-  3
-  4
-  5
-  6
-  7
-  80
-  90

Parcel ID	140261000	Alternate ID	n/a
Sec/Twp/Rng	26/039/028	Class	2B-Rural Vacant Land/Non-Productive - Non Homestead
Property Address	41142 53RD ST FOLEY MN 56329	Acreage	80.0
District	LAKIN-School District 912		
Brief Tax Description	S1/2 OF SW1/4		

(Note: Not to be used on legal documents)

Owner Address
 AMY LORENTZ
 550 ALBION PLACE
 MAPLE LAKE MN
 55358

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The digital Q3 Flood Data product was **not designed to make strict in/out flood risk determinations.** The data is designed to provide guidance and a general proximity of the location of Special Flood Hazard Areas. The digital Q3 Flood Data product is not suitable for engineering applications such as detailed site design and development plans or flood risk determinations. The digital Q3 Flood Data cannot be used to determine absolute delineation of flood boundaries, but instead should be seen as portraying zones of uncertainty and possible risks associated with flood inundation. Users must apply considerable care and judgment in applying this product. Users of the digital Q3 Flood Data should refer to the [Q3 User's Guide](#) and [Q3 Specifications](#) for further information.

41142 53rd Street, Foley, Mn								Soil Log #2	
		<input type="checkbox"/> Boring	<input checked="" type="checkbox"/> Pit	Elevation	<u>99.92</u>	Depth to SHWT	<u>98.26</u>		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape		
0-6	Sandy Loam	<35	10yr 3-2		Friable	Moderate	Granular		
6-20	Loamy Sand	<35	10yr 4-4		Friable	Weak	Blocky		
20-22	Loamy Sand	<35	10yr 4-4	7.5yr 4-6	Friable	Weak	Blocky		
		<35 35 - 50 >50			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		

41142 53rd Street, Foley, Mn								Soil Log #3	
		<input type="checkbox"/> Boring	<input checked="" type="checkbox"/> Pit	Elevation	<u>99.92</u>	Depth to SHWT	<u>98.34</u>		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape		
0-7	Sandy Loam	<35	10yr 3-2		Friable	Moderate	Granular		
7-19	Loamy Sand	<35	10yr 4-4		Friable	Weak	Blocky		
19-22	Loamy Sand	<35	10yr 4-4	7.5yr 5-8 & 6-1	Friable	Weak	Blocky		
		<35 35 - 50 >50			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.

Designer Signature

Johnson Septic Systems
Company

1023
License #

LUG soil verify Signature

+

LUG media elev/depth Signature

= Soil Separation Report

41142 53rd Street, Foley, Mn								Soil Log #4	
		<input type="checkbox"/> Boring		<input checked="" type="checkbox"/> Pit		Elevation _____		Depth to SHWT <u>18"+</u>	
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape		
0-6	Sandy Loam	<35	10yr 3-1		Friable	Moderate	Granular		
6-18	Loamy Sand	<35	10yr 4-4	None Found	Friable	Weak	Blocky		
		<35 35 - 50 >50			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		
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive		

41142 53rd Street, Foley, Mn								Soil Log #5	
		<input type="checkbox"/> Boring		<input checked="" type="checkbox"/> Pit		Elevation _____		Depth to SHWT <u>19"</u>	
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape		
0-5	Sandy Loam	<35	10ye 3-1		Friable	Moderate	Granular		
5-19	Loamy Sand	<35	10yr 4-4		Friable	Weak	Blocky		
19-22	Loamy Sand	<35	10yr 4-4	7.5yr 4-6 & 6-1	Friable	Weak	Blocky		
		<35 35 - 50 >50			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		

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License #

Morrison County, Minnesota

454C—Mahtomedi loamy sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: fmx
Elevation: 670 to 1,600 feet
Mean annual precipitation: 22 to 33 inches
Mean annual air temperature: 36 to 45 degrees F
Frost-free period: 88 to 142 days
Farmland classification: Not prime farmland

Map Unit Composition

Mahtomedi and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mahtomedi

Setting

Landform: Hillslopes on outwash plains, hillslopes on moraines
Landform position (two-dimensional): Backslope, summit, shoulder
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and gravelly outwash

Typical profile

A - 0 to 5 inches: loamy sand
E - 5 to 10 inches: sand
Bw1, Bw2 - 10 to 35 inches: coarse sand
C - 35 to 60 inches: gravelly sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: F090AY019WI - Dry Sandy Uplands
Forage suitability group: Sandy (G090XN022MN)
Other vegetative classification: Sandy (G090XN022MN)

Hydric soil rating: No

Minor Components

Emmert

Percent of map unit: 4 percent
Hydric soil rating: No

Menahga

Percent of map unit: 4 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Morrison County, Minnesota
Survey Area Data: Version 22, Sep 10, 2023

Mound Design

Property Owner: **Tom and Amy Lorentz**

Date: **3/15/2024**

Site Address: **41142 53rd Street, Foley, Mn**

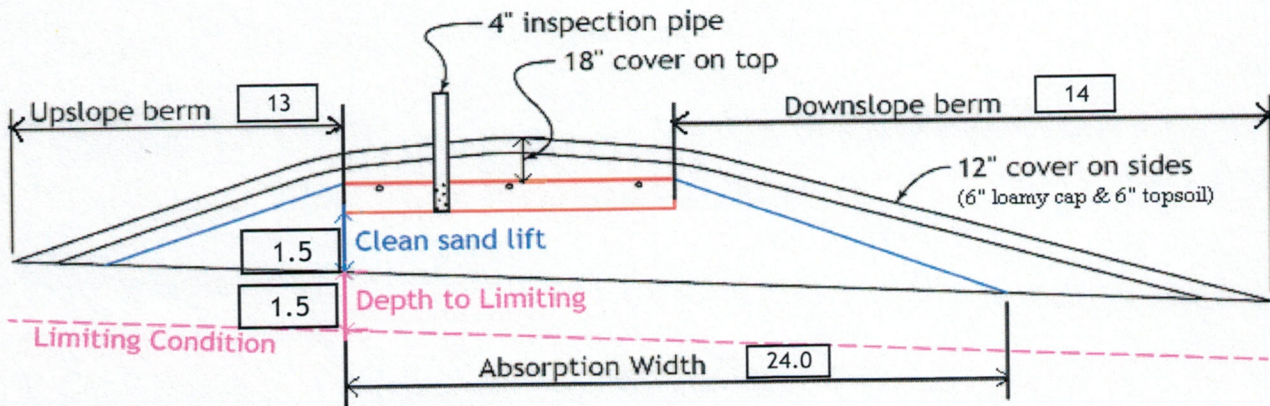
PID: **14.0261.000**

Comments: _____

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

- 1) 2 bedroom Type 1 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) 1.2 GPD/ft² mound sand loading rate contour loading rate of 12 req's a min 25 ft. long rockbed
- 6) 10.0 ft rockbed width 25.0 ft rockbed length
- 7) 3.0 ft lateral spacing 3.0 ft perforation spacing (maximum of 3 for both)
end feed manifold connection
- 8) 3 laterals 23.0 feet long 8.0 perfs / lateral 24 perfs total
(1/2 a 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
for this perf size & spacing, & pipe size on line 12, max perfs/lateral = 16, line #8 must be less --> OK
- 10) 4.0 doses per day (4 minimum)
- 11) 75 gallons per dose (treatment volume)
- 12) 1.50 inch diameter laterals must be used to meet "4x pipe volume" requirement
- 13) 40 feet of 2.0 inch supply line leads to 7 gallons of drainback volume
(Tip: "top feed" manifold to control the drainback)
- 14) 82 gallons TOTAL pump out volume (treatment + drainback)
- 15) 10 feet vertical lift from pump to mound laterals, leads to a:
- 16) 18 GPM @ 16 feet of head, Pump requirement (note: >50gpm may require an extra 3-6' of head)
- 17) 500 gal Dose tank (code minimum) 500 gal Dose tank (design size / LUG req'd) at 10.50 gpi
leads to a: Optional Time dosing of:
- 18) 7.8 inch swing on Demand float, (this delivers Average flow, =70% of Peak design flow)
4.6 min ON
8.5 hrs OFF
- 19) 12 inches from bottom of tank to "Pump OFF" float
- 20) 20 inches from bottom of tank to "Pump ON" float
- 21) 23 inches from bottom of tank to "Hi Level" float
- 22) 259 gallons reserve capacity (after High Level Alarm is activated-demand dosed)

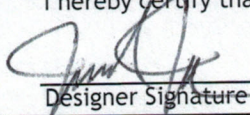
- 23) 0.50 gpd/ft² Absorption area Soil Loading Rate, which gives a mound ratio of 2.4 (minimum)
 (this must match the soil boring log) desired mound ratio 2.4
- 24) 1 percent site slope (0-20% range) 1 (% downslope site slope, if different than upslope)
- 25) 18 inches, or 1.5 ft. to Redox or other limiting condition (need at least 12" to be a Type I)
 Treatment zone contains 0 inches of 0% soil credit, and 0 inches of 50% soil credit. Giving a:
- 26) 18 inch, or 1.5 ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**
- 27) 24.0 ft. Total ABSORPTION width (with sand beyond rockbed as follows:)
- 28) 7.0 ft. upslope and sideslope
 7.0 ft. Downslope
- Individual slope ratios give BERM widths (topsoil beyond rockbed) of:
- 29) 4:1 upslope ratio 13 ft. upslope berm
- 30) 4:1 sideslope 14 ft. sideslope berms
- 31) 4:1 downslope 14 ft. downslope berm
- 32) Overall Dimensions: 10.0 ft. wide by 25.0 ft. long Rock bed
 37 ft. wide by 53 ft. long Mound footprint



Note:
 For 0 to 1% slopes, *Absorption Width* is measured from the *Bed* equally in both directions.
 For slopes >1%, *Absorption Width* is measured downhill from the upslope edge of the *Bed*.

- 33) Rock Bed:
 10.0 ft. by 25.0 ft. by 6 inches under pipe, plus 20% gives 9 yd³ or *1.4= 13 ton
- 34) Mound Sand: (note: volume is based on 3:1/4:1 slope from top of rockbed, Exchange sand for loamy cap if desired)
 20.1 up + 23.5 downslope + 10.0 ends + 14.4 under rock = 81 yd³ or *1.4= 114 ton
 plus 20%
- 35) Loamy Cap:
 33 ft. by 49 ft. 6" deep, plus 20% gives 36 yd³ or *1.4= 50 ton
- 36) Topsoil:
 37 ft. by 53 ft. 6" deep, plus 20% gives 44 yd³ or *1.4= 62 ton

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


 Designer Signature

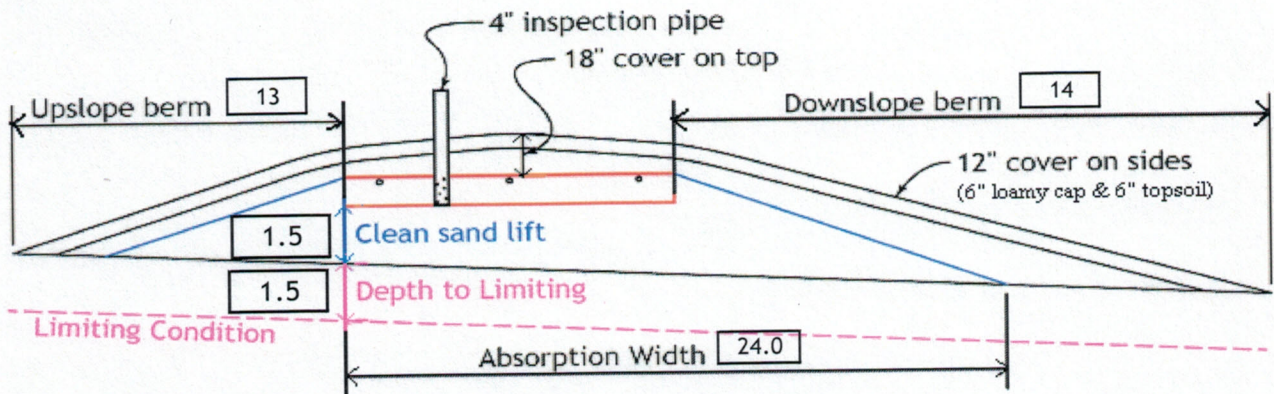
Johnson Septic Systems
 Company

1023
 License#

3/15/2024
 Date

Installer Summary

- 1000 gallon Septic tank (minimum) Tank options: none
- 500 gallon Dose tank (minimum) at 10.50 gpi
- 18 GPM @ 16 ft. of head, Pump required
7.8 inch swing on Demand float which translates to roughly 4.9 inches of float tether length
- Optional Time dosing of:
- 4.6 minutes ON
 - 8.5 hours OFF
 - 12 inches to "timer ON" float
 - 33 inches to "Hi level" float
- 20 inches from bottom of tank to "pump ON" float, or
23 inches from bottom of tank to "Hi Level Alarm" or
- 40 ft. of 2.0 inch supply line with end feed manifold connection
(Tip: "top feed" manifold to control drainback)
- 18 inch, or 1.5 ft. Sand Lift Mound
10.0 ft. wide by 25.0 ft. long Rock bed
3 laterals 1.50 inch diameter 23.0 ft. long 3.0 ft. lateral spacing
1/4" inch perfs 3.0 ft. perforation spacing
- No Effluent filter & alarm
3 clean out & valve box assemblies
- 24.0 ft. Total sand ABSORPTION width (minimum)
- 7.0 ft. upslope and sideslope (sand beyond rockbed, minimum)
 - 7.0 ft. Downslope (sand beyond rockbed, minimum)
- Specific slope ratios give BERM widths (topsoil beyond rockbed) of:
- | | |
|-------------------|------------------------|
| 4:1 upslope ratio | 13 ft. upslope berm |
| 4:1 sideslope | 14 ft. sideslope berms |
| 4:1 downslope | 14 ft. downslope berm |



Note:

For 0 to 1% slopes, *Absorption Width* is measured from the *Bed* equally in both directions.
For slopes >1%, *Absorption Width* is measured downhill from the upslope edge of the *Bed*.

Rock Bed:	9.0 yd ³ or *1.4=	13 ton	6 inches under pipe
Mound Sand:	81 yd ³ or *1.4=	114 ton	calculation based on 3:1/4:1 slope from top of rockbe
Loamy Cap:	36 yd ³ or *1.4=	50 ton	6" deep
Topsoil:	44 yd ³ or *1.4=	62 ton	6" deep

INSPECTOR CHECKLIST - mound

41142 53rd Street, Foley, Mn

- 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, slope minimum 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

Optional Time dosing of:
 4.6 min ON 8.5 hr OFF

- dose pump _____ 18 gpm 16 head VERIFY PUMP CURVE
- verify that installed "vertical lift from pump to laterals" is no more than design value of 10 feet
- float setting drop 7.8 inches at 10.5 gpi "DESIGNED" 4.9 inches approx float tether length
82.0 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
- mound absorption area rough up
- mound rock dimensions 10.0 X 25.0
- Sand lift depth 18 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)

- Absorption Sand beyond rock 7.0 upslope 7.0 downslope
- Bermed topsoil beyond rockbed 13 upslope 14 sideslope 14 downslope

- cover depth of 12-18"+ VERIFY
- 3 laterals (1-2' from edge of rock)
- 1.50 inch pipe size (Sch40 pipe & fittings)
- 3.0 ft lateral spacing

- 1/4" inch perforations
- 3.0 ft perforation spacing

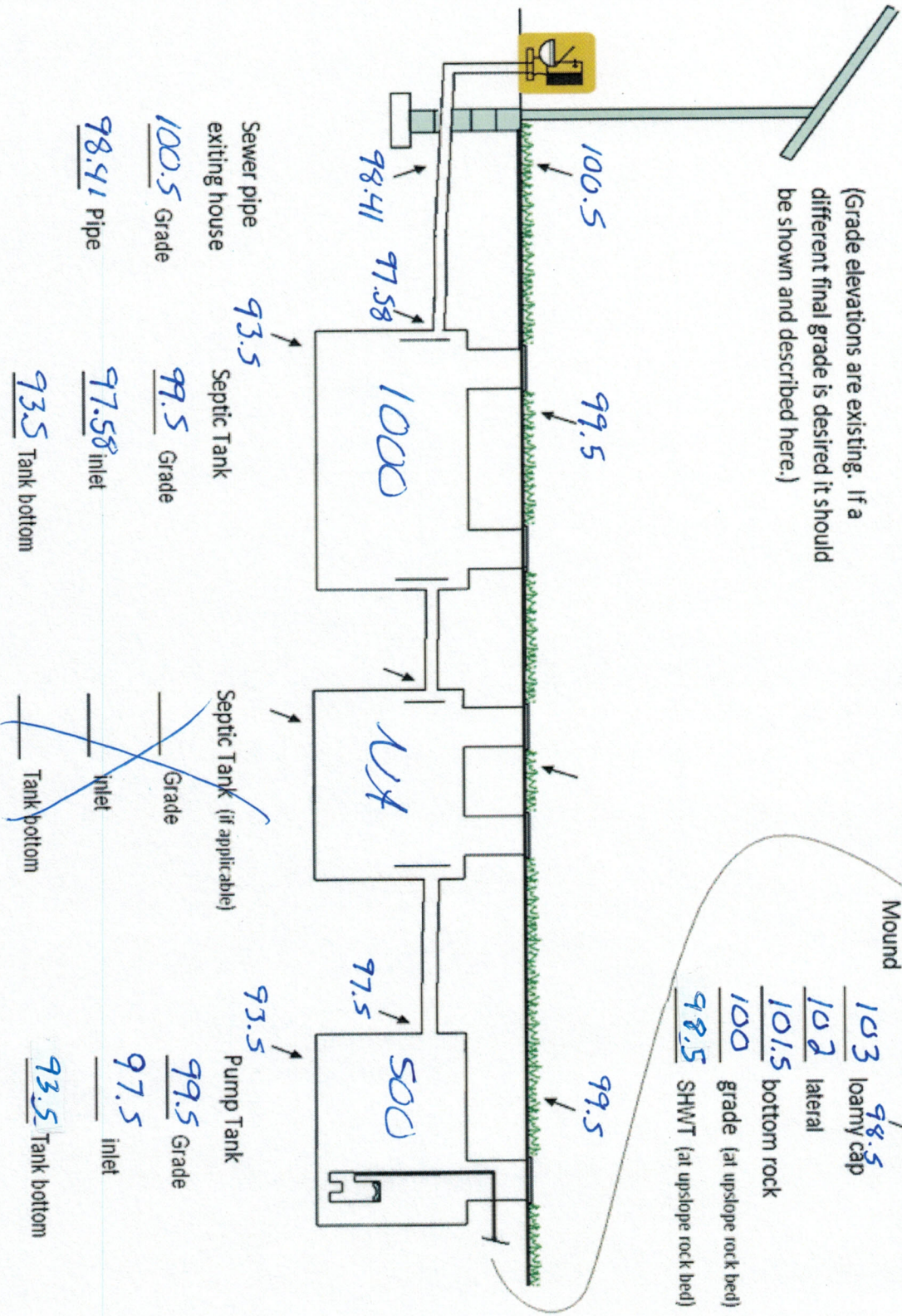
- Air inlet at end of laterals, and at top feed manifold if necessary. VERIFY
- clean outs (no hard 90's)
- 4" inspection pipe to bottom of rock, anchored VERIFY

- Abandon existing system - if necessary Re-use existing tank certification
- monitoring plan and type _____
- well abandonment form - if necessary

System Elevations

100.0 benchmark grade of upslope K.B.

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



Sewer pipe exiting house
100.5 Grade
98.41 Pipe

Septic Tank
99.5 Grade
97.58 Inlet
93.5 Tank bottom

~~Septic Tank (if applicable)
99.5 Grade
97.58 Inlet
93.5 Tank bottom~~

Pump Tank
99.5 Grade
97.5 Inlet
93.5 Tank bottom

