

Preliminary & Field Evaluation Form

www.SepticResource.com vers 12.4

Owner Information			
Date	<u>9/12/2023</u>	Sec / Twp / Rng	<u>S-5, T-44, R-27</u>
Parcel ID	<u>11-0-000807</u>	LUG (county, city, township)	<u>Aitkin Co.</u>
Property Owner:	<u>Cole Panchanee</u>	Owners address (if different)	
Property Address:	<u>44201 Conifer St Aitkin MN 56431</u>		
City / State / Zip:			

Flow Information and Waste Type / Strength			
Estimated Design flow	<u>450</u>	Anticipated Waste strength	<input type="checkbox"/> Hi Strength <input checked="" type="checkbox"/> Domestic
Comments: 3 bedroom, Gravity Flow, Slab on Grade 2 Deep wells on this lot. Not enough room for 2nd septic site		Any Non-Domestic Waste	<input type="checkbox"/> Yes (class V) <input checked="" type="checkbox"/> No
		Sewage ejector/grinder pump	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Water softener	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Garbage Disposal	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Daycare / In home business	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Site Information					
Existing & proposed lot improvements located (see site map)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Well casing depth	Existing deep well	
Easements on lot located (see site map)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Drainfield w/in 100' of residential well	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Property lines determined (see site map)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Site w/in 200' of transient noncommunity water supply (TNCWS)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Req'd setbacks determined (see site map)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Site w/in an inner wellhead mgmt zone (CWS/NTNCWS)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Utilities located & identified (gopher state one call)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Buried water supply pipe w/in 50' of system	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Access for system maintenance (shown on site map)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Site located in Shoreland (w/in 1000' of lake, 300' of river)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Soil treatment area protected	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Site map prepared with previous items included	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Construction related issues	<u>Install tank in South berm 10 ft from house, side inlet.</u>				

Soil Information

			Evidence of site:
Original soils	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		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
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>0.60</u>		Percolation rate (if applicable) _____
Depth/elev to SHWT	<u>18"</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>(+ 18")</u>		Flood elevation (if applicable) _____
Depth/elev to standing water (if applicable)	_____		Elevation of ordinary high water level (if applicable) <u>1252.8'</u>
Depth/elev to bedrock (if applicable)	_____		Floodplain designation and elev - 100 yr/10 yr (if applicable) <u>1253.6'</u> Approx. House grade Elv.= 1292'
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.



 Designer Signature

Brummer Septic LLC.

 Company

L-1347

 License #

Soil Observation Log

www.SepticResource.com vers 12.4

Owner Information	
Property Owner / project:	<u>Cole Panchanee</u> Date <u>9/12/2023</u>
Property Address / PID:	<u>44201 Conifer St Aitkin MN 56431</u>

Soil Survey Information	
<input type="checkbox"/> refer to attached soil survey	
Parent mat'l'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 type="checkbox"/> Shoulder <input checked="" type="checkbox"/> Side slope <input type="checkbox"/> Toe slope
soil survey map units:	<u>504B</u> slope <u>5</u> % direction- <u>East</u>

Soil Log #1								
		<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation <u>97.3'</u>	Depth to SHWT <u>23"</u>			
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape	
0 - 6	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular	
6 - 23	Loam	<35	10YR4/3		Loose	Loose	Granular	
23 - 36	Silt Loam	<35	10YR4/4	7.5YR5/6	Friable	Weak	Blocky	
36	Clay Loam	<35	10YR4/4		Friable	Weak	Blocky	
Comments:								

44201 Conifer St Aitkin MN 56431

Soil Log #2

<input checked="" type="checkbox"/> Boring <input type="checkbox"/> Pit Elevation <u>98.4'</u> Depth to SHWT <u>22"</u>							
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 6	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular
6 - 22	Loam	<35	10YR4/3		Loose	Loose	Granular
22 - 28	Silt Loam	<35	10YR4/3	7.5YR5/6	Friable	Weak	Blocky

44201 Conifer St Aitkin MN 56431

Soil Log #3

<input type="checkbox"/> Boring <input type="checkbox"/> Pit Elevation _____ Depth to SHWT _____							
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
		<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
		<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

Brummer Septic LLC.

Company

L-1347

License #

Mound Design - Aitkin county

Property Owner: Cole Panchanee

Date: 9/12/2023

Site Address: 44201 Conifer St Aitkin MN 56431

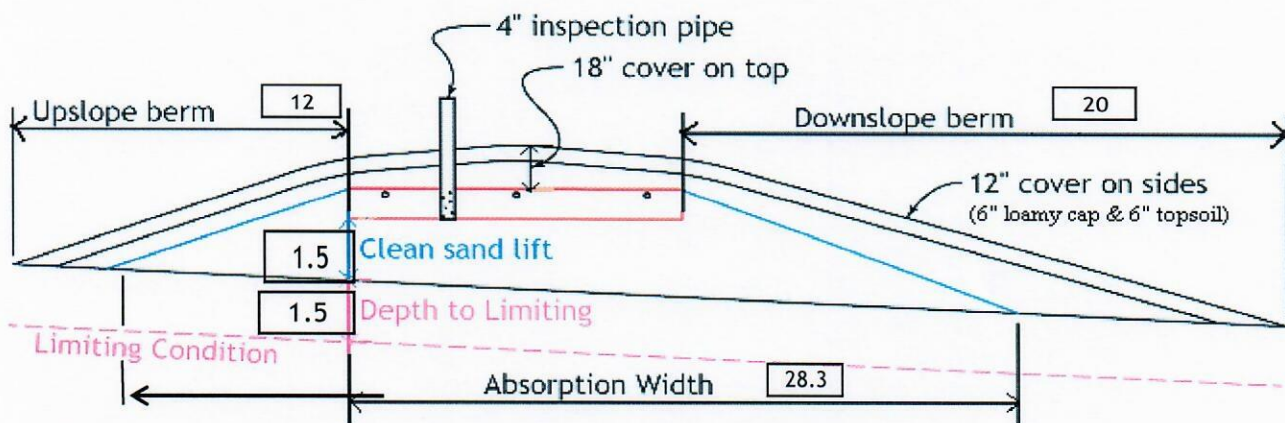
PID: 11-0-000807

Comments: _____

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

- 1) 3 bedroom Type I Residential System
- 2) 450 GPD design flow Installer may use another Tank MFG 1500 2/compartment or larger
- 3) No Garbage disposal or pumped to septic Install 1650 Jacobson 2/Compartment Septic / Pump Tank
- 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 37.5 ft. long rockbed
- 6) 10.0 ft rockbed width 38.0 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 36.0 feet long 13.0 perfs / lateral 39 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) 7.0 doses per day (4 minimum)
- 11) 64 gallons per dose (treatment volume) 1.50 5x
- 12) 1.50 inch diameter laterals must be used to meet "4x pipe volume" requirement 2.00 3x
- 13) 30 feet of 2.0 inch supply line leads to 5 gallons of drainback volume
(Tip: "top feed" manifold to control the drainback)
- 14) 69 gallons TOTAL pump out volume (treatment + drainback)
- 15) 12 feet vertical lift from pump to mound laterals, leads to a:
- 16) 29 GPM @ 18 feet of head, Pump requirement (note: >50gpm may require an extra 3-6' of head)
- 17) 500 gal Dose tank (code minimum) 533 gal Dose tank (design size / LUG req'd) at 12.69 gpi
leads to a
- 18) 5.4 inch swing on Demand float, or timed dosing of 2.4 min ON (confirm pump rate with drawdown
(this delivers Average flow, =70% of Peak design flow) 5.2 hrs OFF test and adjust as necessary)
- 19) 12 inches from bottom of tank to "Pump OFF" float
- 20) 17 inches from bottom of tank to "Pump ON" float, or 12 inches to "Timer ON" float if time dosed
- 21) 20 inches from bottom of tank to "Hi Level" float, or 30 inches to "Hi Level" float if time dosed
- 22) 279 gallons reserve capacity (after High Level Alarm is activated)

- 23) 0.60 gpd/ft² Absorption area Soil Loading Rate, which gives a mound ratio of $\frac{2}{2.0}$ (minimum)
 (this must match the soil boring log) desired mound ratio
- 24) 5 percent site slope (0-20% range) 5 (% 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) 20.0 ft. base absorption width (with sand beyond rockbed as follows):
 28.3 greater of: absorption width OR sand slope
- 28) 0.0 ft. upslope and sideslope sand upslope 8.3
 10.0 ft. Downslope sand down slope 10.0
- Individual slope ratios give BERM widths (topsoil beyond rockbed) of: Use 10 to meet prop line setback.
- 29) 4:1 upslope ratio 12 ft. upslope berm
- 30) 4:1 sideslope 16 ft. sideslope berms
- 31) 4:1 downslope 20 ft. downslope berm
- 32) Overall Dimensions: 10.0 ft. wide by 38.0 ft. long Rock bed
 42 ft. wide by 70 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 38.0 ft. by 9 inches under pipe, plus 20% gives 17 yd³ or *1.4= 24 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)
 23.9 up + 51.7 downslope + 13.3 ends + 24.6 under rock = 136 yd³ or *1.4= 191 ton plus 20%
- 35) Loamy Cap: 38 ft. by 66 ft. 6" deep, plus 20% gives 56 yd³ or *1.4= 78 ton
- 36) Topsoil: 42 ft. by 70 ft. 6" deep, plus 20% gives 66 yd³ or *1.4= 92 ton

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

_____ Brummer Septic LLC. L-1347 9/12/2023
 Designer Signature Company License# Date

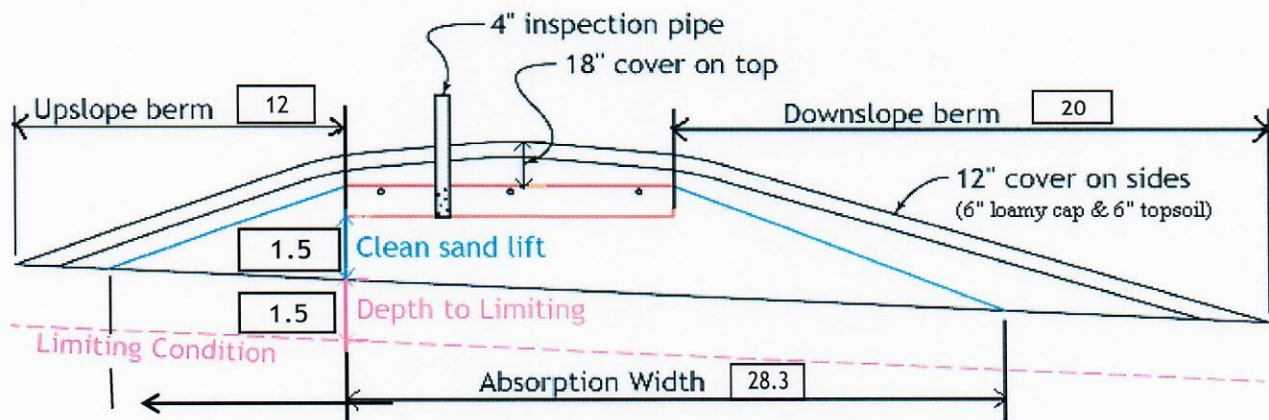
Installer Summary

- 1000 gallon Septic tank (minimum) Tank options: none
 Install 1650 Jacobson 2/Compartment Septic / Pump Tank
 533 gallon Dose tank (minimum) at 12.69 gpi
- 29 GPM @ 18 ft. of head, Pump required
 5.4 inch swing on Demand float which translates to roughly 3.7 inches of float tether length
 if time dosing is required --> 2.4 minutes ON time & 5.2 hours OFF time
- 17 inches from bottom of tank to "pump ON" float, or 12 inches to "timer ON" float
 20 inches from bottom of tank to "Hi Level Alarm" or 30 inches to "Hi level alarm" if time dosed
- 30 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 38.0 ft. long Rock bed
 3 laterals 1.50 inch diameter 36.0 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

- 28.3 ft. Total sand ABSORPTION width (minimum)
 8.3 ft. upslope and sideslope (sand beyond rockbed, minimum)
 10.0 ft. Downslope (sand beyond rockbed, minimum)

Specific slope ratios give BERM widths (topsoil beyond rockbed) of:

- 4:1 upslope ratio 12 ft. upslope berm
 4:1 sideslope 16 ft. sideslope berms
 4:1 downslope 20 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:	17.0 yd ³ or *1.4=	24 ton	9 inches under pipe
Mound Sand:	136 yd ³ or *1.4=	191 ton	
Loamy Cap:	56 yd ³ or *1.4=	78 ton	6" deep
Topsoil:	66 yd ³ or *1.4=	92 ton	6" deep

INSPECTOR CHECKLIST - mound

44201 Conifer St Aitkin MN 56431

- WELL setbacks: 20' to pressure tested sewer line (5 psi for 15 min)
50' to everything 100' to dispersal area 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 se 10' to bed, tank & sewer line. (else sewer line > 12" below, else ok w/pvc)

- Sewer line & baffle connection (no 90's, 3' between 45's, slope min 1" in 8', max 2" in 8')
(no depth req's, clean out every 100', Sch 40 pipe)

- Septic tank and risers (water tight, 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, insulated, proper depth, drainback)
mfg _____ 533 gallons

- dose pump _____ 29 gpm 18 head VERIFY PUMP CURVE 2.4 min ON 5.2 hr OFF

- float setting drop 5.4 inches at 12.7 gpi "DESIGNED" 3.7 inches approx float tether length
69.0 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
flow measurement: CT, ETM, time dosed, home water meter
mound absorption area rough up
mound rock dimensions 10.0 X 38.0
Sand lift depth 18 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)

- Absorption Sand beyond rock 8.3 upslope 10.0 downslope

- Bermed topsoil beyond rockbed 12 upslope 16 sideslope 20 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

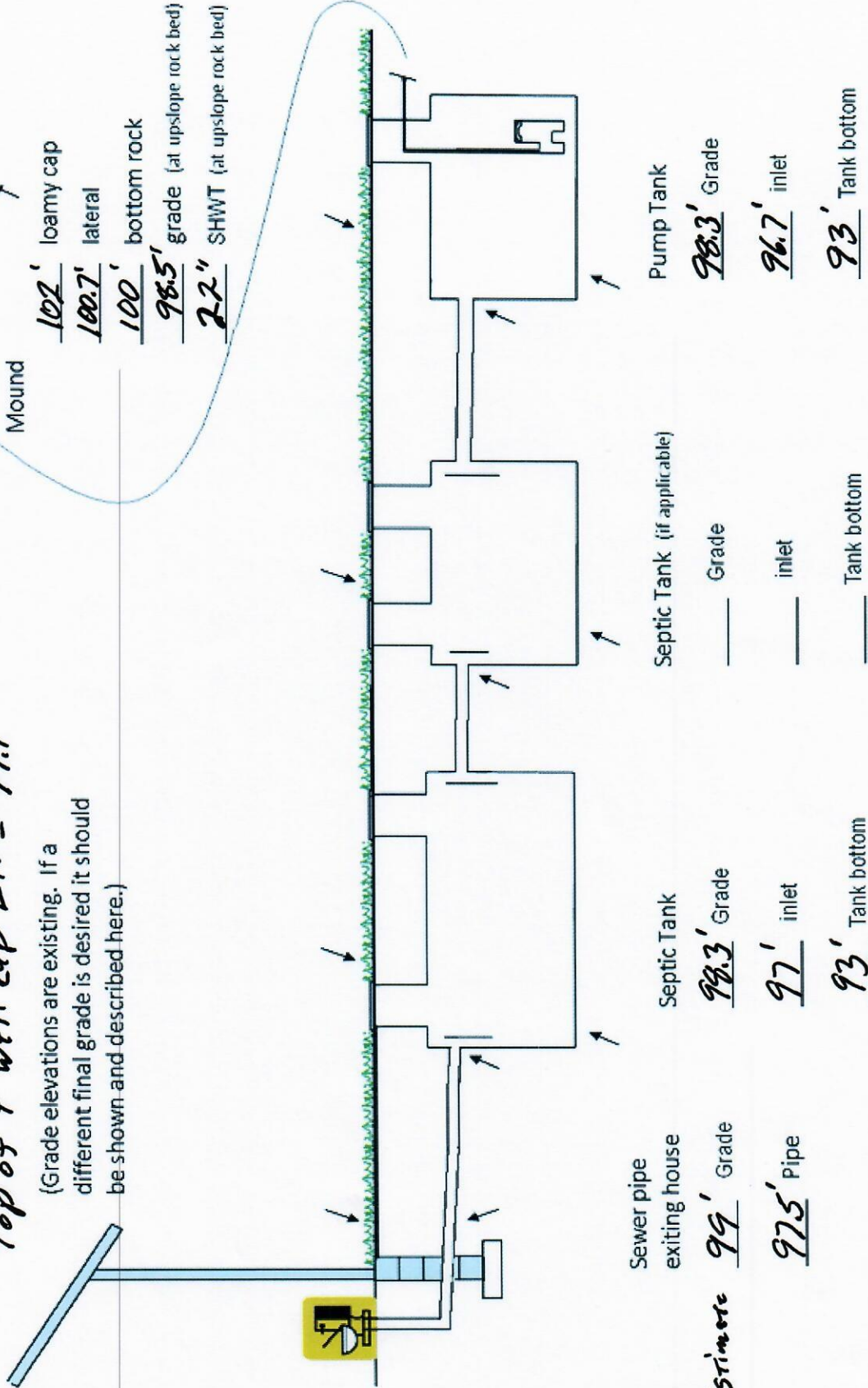
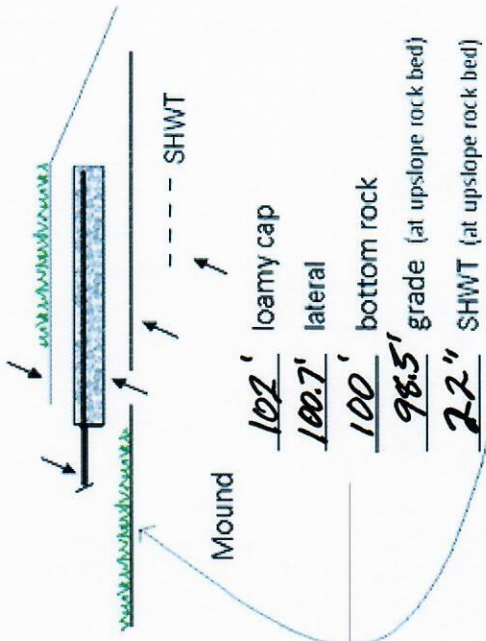
- Air inlet at end of laterals, and at top feed manifold if necessary. VERIFY
- clean outs (no hard 90's)
- 4" inspection pipe to bottom of rock, anchored VERIFY

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

System Elevations

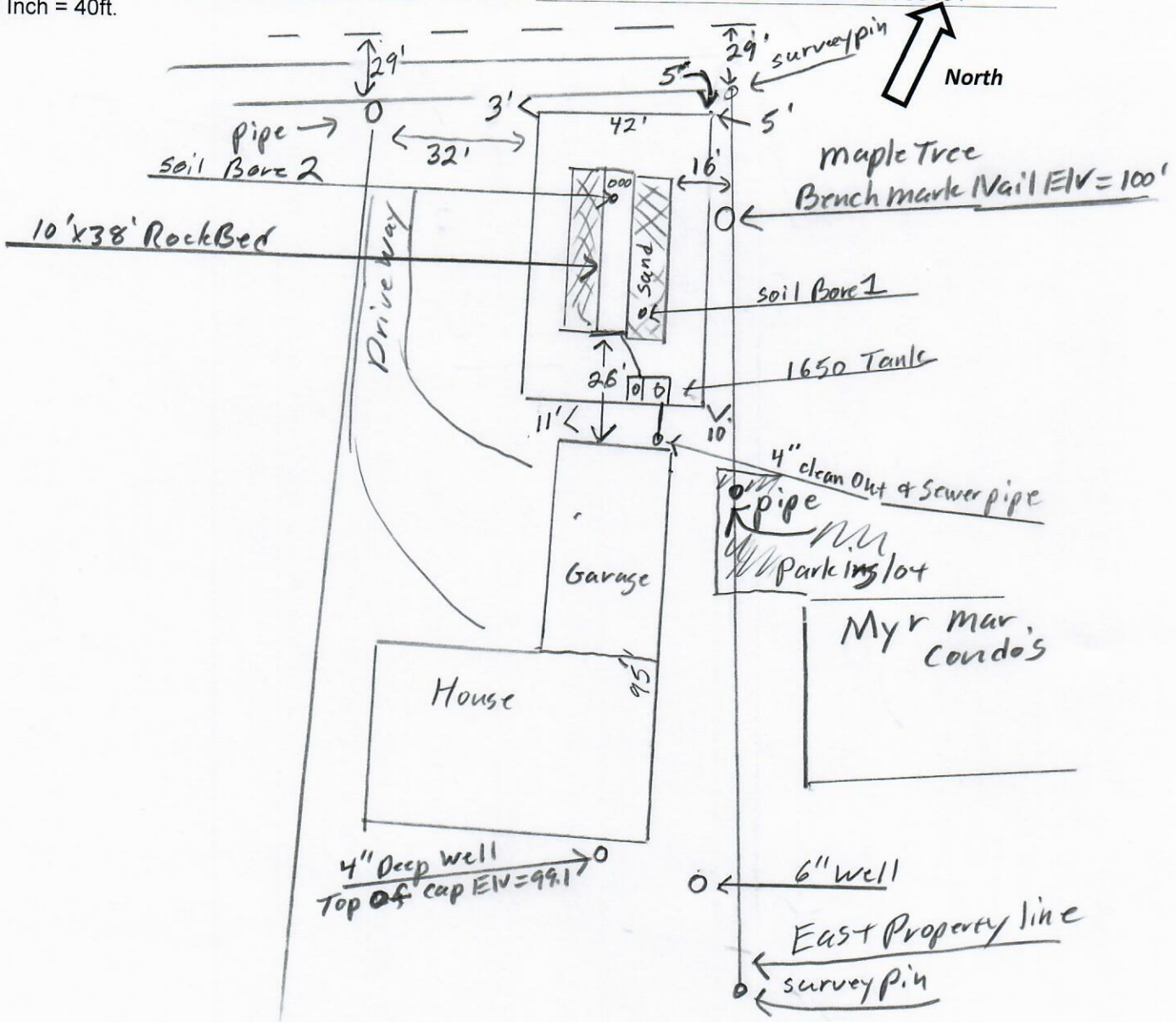
ELV = 100' benchmark Nail on Maple Tree ELV = 100'
Top of 4" well cap ELV = 99.1'

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



{ Design Drawing }

Property Owner: Cole Panchanee Date: 9/12/23 Designer's Initials: JB
 Parcel ID. Number: 11-0-000807 Address: 44201 Conifer St Aitkin MN 56431
 one Inch = 40ft.



Top Of 4" Deep Well Cap EIV. = 99.1'

	Surface/ SHWT	Nail on Tree = Bench Mark 100'		Existing Grade	
Soil Bore 1	97.3' / 23"	Bench Mark	100'	Upslope Edge of Rockbed EIV. = 98.5'	
Soil Bore 2	98.4' / 22"	Ground EIV. BM		Bottom of Rockbed EIV. = 100'	
Soil Bore 3		Ground EIV. Tank	98.3'	Top of Washed Sand EIV. = 100'	
	Estimated	Proposed house	99'	Pad	Estimated Sewer pipe at House EIV. = 97.5'

Please show all that apply (Existing)

Please Draw to Scale with North to Top or Left Side of Page:

- Wells within 100ft. Of Drain field.
- Water lines within 10 ft. of Drain field.
- Drain field Areas:

- Disturbed/Compacted Areas
- Component Location
- OHW ordinary high water
- Lot Easements

- Access Route for Tank Maintenance
- Property Lines
- Structures
- Setbacks

Mound Design Notes - Aitkin county

Property Owner: Cole Panchanee

Date: 9/12/23

Site Address: 44201 Conifer St Aitkin MN 56431

PID: 11-0-000807

Comments: **Mound design may not follow Aitkin co. Auto fill form for mound design.**

- 1 This is a type I mound for a 3 bedroom House. Existing deep wells locations South East corner of House. 6" deep well has easement for Myr-Mar condo's. 4" deep well is + 100 ft from tank and mound.
- 2 East line survey pins were found, NW lot corner has pipe. Top of 4" deep Well cap Elv.= 99.1'
- 3 There is not enough room for a 2nd septic site. (Type I)
- 4 Bench Mark Elevation is a nail (Elv.= 100') on a Maple tree near NE corner of mound area.
- 5 Install Jacobson 1650 Compartment tank for gravity flow from Slab on grade house (Elv. not set)
Order tank with side inlet. Estimated top of gravel House pad Elv.= 99' estimated sewer pipe Elv.= 97.5'
Install tank in South berm 10 ft from house.
- 6 Elevation contour of rock bed upslope edge is 98.5'.
The area size of the rock bed is 10' x 38' . Absorption area is 38' x 28.3'.
Sand absorption area is 8.3 ft. up slope + 10 ft. rockbed + 10' downslope = approx. 28.3 ft. wide sand base.
Down Slope Edge of Washed sand must be 15 ft from East property line, (Setback absorption width to Prop line)
South End of Rockbed must be at least 25 ft from garage (any building).
Berms are 12ft. Upslope, 20ft. Down slope, 10ft. Rock bed = approx. 42ft. Wide.
Overall mound size is approx. 42' wide x 70' long and approx. 3.5' high. End Berms are 16 ft wide.
- 7 The bench mark is the nail on the Maple tree near mound area, BM = Elv. 100'.
Installer to double check bench mark. Installer should confirm bench mark and sand height Elv. with inspector.
Installer should record bench mark Elv. and sand height on installation inspection form.
- 8 The top of the washed sand and bottom of rock bed is Elv. 100'.
It is important that the soils do not get compacted, and that clean washed sand is used.
- 9 The Jacobson 1650 compartment tank will be gravity flow from dwelling. Install the pump for 7 demand doses per day. approx. 69 gallons per dose, 5.4 inches of tank level. Install alarm at 3 inches from pump on level.
Install all manholes, inspection pipes and clean-outs to grade or above, insulate top of tank.
Recommend raising manholes 4" above finished Grade for access.
- 10 Install a 2" supply pipe from tank to end manifold in rock bed, install so pipe drains back to tank.
Install 1.5" laterals with 9" of rock under them. (Install Lateral clean-outs at far end of laterals. Recommended)
- 11 **Drill 1/4" holes for Perf sizing, 36" on centers.**
Install 4" inspection pipe to bottom of rock bed, secure in rock bed and raise to above final grade.
Recommend Installing an Effluent filter and Alarm on septic tank outlet.
MPCA Recommends installing an event counter on all systems with a pump.

Designed to Aitkin Co. and MPCA recommendations and requirements.


Designer Signature

Brummer Septic LLC.
Design Company

L-1347
License#

Installer may use another Tank MFG 1500 2/compartment or larger



Detailed Parcel Report

Parcel Number: 11-0-000807

General Information

Township/City: HAZELTON TWP
 Taxpayer Name: COLE, STEPHEN & PATCHANEE
 Taxpayer Address: 188 BANYAN DR
 BEAUFORT SC 29906
 Property Address: 44201 CONIFER ST
 Township: 44 Lake Number: 48000200
 Range: 27 Lake Name: MILLE LACS **GD**
 Section: 5 Acres: 0.70
 Green Acres: No School District: 1.00
 Plat:
 Brief Legal Description: PT LOT 1 SE OF HY 169 IN DOC 400713

Tax Information

Class Code 1: Unimproved Residential Land
 Class Code 2: Unclassified
 Class Code 3: Unclassified
 Homestead: Non Homestead
 Assessment Year: 2023

*OHW 1252.8
 1004R 1253.6*


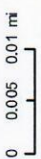
Estimated Land Value:	\$206,900.00
Estimated Building Value:	\$0.00
Estimated Total Value:	<u>\$206,900.00</u>
Prior Year Total Taxable Value:	\$167,300.00
Current Year Net Tax (Specials Not Included):	\$1,134.00
Total Special Assessments:	\$0.00
**Current Year Balance Not Including Penalty:	\$0.00
Delinquent Taxes:	No

*** For more information on delinquent taxes, please call the Aitkin County Treasurer's Office at 218-927-7325.**

**** Balance Due on a parcel does not include late payment penalties.**



Map may not be valid at this scale. Data was mapped at an accuracy of 1:24,000 so any representation of the data at a larger scale is not advised.

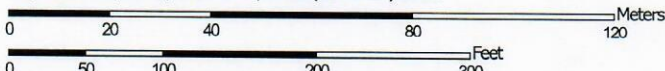
		Date: 9/12/2023
<h3>Patchanee</h3>		Web AppBuilder for ArcGIS
1:1,128		1 inch = 94 feet
<p>These data are provided on an "AS-IS" basis, without warranty of any type, expressed or implied, including but not limited to any warranty as to their performance, merchantability, or fitness for any particular purpose.</p>		

Soil Map—Aitkin County, Minnesota
(Patchanee)



Soil Map may not be valid at this scale.

Map Scale: 1:1,500 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84



Aitkin County, Minnesota

504B—Duluth fine sandy loam, 1 to 6 percent slopes

Map Unit Setting

National map unit symbol: gjh7
Elevation: 980 to 1,640 feet
Mean annual precipitation: 25 to 30 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 120 to 140 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Duluth and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Duluth

Setting

Landform: Moraines
Landform position (two-dimensional): Backslope, summit
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

A - 0 to 3 inches: fine sandy loam
E, Bw, 2BE, 2Bt - 3 to 41 inches: clay loam
2C - 41 to 60 inches: loam

Properties and qualities

Slope: 1 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 13 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: F090AY015WI - Loamy Upland with Carbonates
Forage suitability group: Sloping Upland, Acid (G090AN006MN)
Other vegetative classification: Sloping Upland, Acid (G090AN006MN)

Hydric soil rating: No

Minor Components

Mahtowa and similar soils

Percent of map unit: 3 percent

Landform: Depressions

Hydric soil rating: Yes

Blackhoof and similar soils

Percent of map unit: 3 percent

Landform: Depressions

Hydric soil rating: Yes

Rifle and similar soils

Percent of map unit: 3 percent

Landform: Bogs

Hydric soil rating: Yes

Cromwell and similar soils

Percent of map unit: 2 percent

Hydric soil rating: No

Cutaway and similar soils

Percent of map unit: 2 percent

Hydric soil rating: No

Dusler and similar soils

Percent of map unit: 2 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: Aitkin County, Minnesota

Survey Area Data: Version 23, Sep 6, 2022