

Preliminary & Field Evaluation Form

www.SepticResource.com vers 12.4

Owner Information

Date 8/5/2020 Sec / Twp / Rng S-21, T-46, R-26 Lot 3 & 4
 Parcel ID 24-1-074300 LUG (county, city, township) Aitkin Co.
 Property Owner: David Sanders Owners address (if different)
 Property Address: 30558 379th Ave. Aitkin MN 56431 30562 379th Ave. Aitkin MN 56431
 City / State / Zip: _____

Flow Information and Waste Type / Strength

Estimated Design flow 300
 Comments: Exsiting Gravity bed and tank to be abandon
Shallow Well South side of house in yard.

Anticipated Waste strength	<input type="checkbox"/> HI Strength	<input checked="" type="checkbox"/> Domestic
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 Shallow 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) By Others	<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 new septic tank</u>				

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>30"</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")</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.


 Designer Signature

Brummer Septic LLC.
 Company

L-1347
 License #

Soil Observation Log

www.SepticResource.com vers 12.4

Owner Information	
Property Owner / project: <u>David Sanders</u>	Date <u>8/5/2020</u>
Property Address / PID: <u>30558 379th Ave. Aitkin MN 56431</u>	

Soil Survey Information	
<input type="checkbox"/> refer to attached soil survey	
Parent matl's:	<input type="checkbox"/> Till <input checked="" 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>454C</u>	slope <u>4</u> % direction- <u>East</u>

Soil Log #1							
	<input checked="" type="checkbox"/> Boring <input type="checkbox"/> Pit	Elevation <u>98.4'</u>	Depth to SHWT <u>30"</u>				
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 6	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular
6 - 30	Med Sand	<35	10YR4/6		Loose	Loose	Granular
30 - 40	Med Sand	<35	10YR5/4	7.5YR5/6	Loose	Loose	Granular
		<35			Loose	Loose	Granular
		<35			Loose	Loose	Granular
Comments:							

30558 379th Ave. Aitkin MN 56431

Soil Log #2

Boring

Pit

Elevation 98.7'

Depth to SHWT 38"

Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 12	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular
12 - 38	Med Sand	<35	10YR4/6		Loose	Loose	Granular
38 - 42	Med Sand	<35	10YR4/6	7.5YR5/6	Loose	Loose	Granular
		<35					
		<35					

30558 379th Ave. Aitkin MN 56431

Soil Log #3

Boring

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

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 License #

Mound Design - Aitkin county

Property Owner: David Sanders

Date: 8/5/2020

Site Address: 30558 379th Ave. Aitkin MN 56431

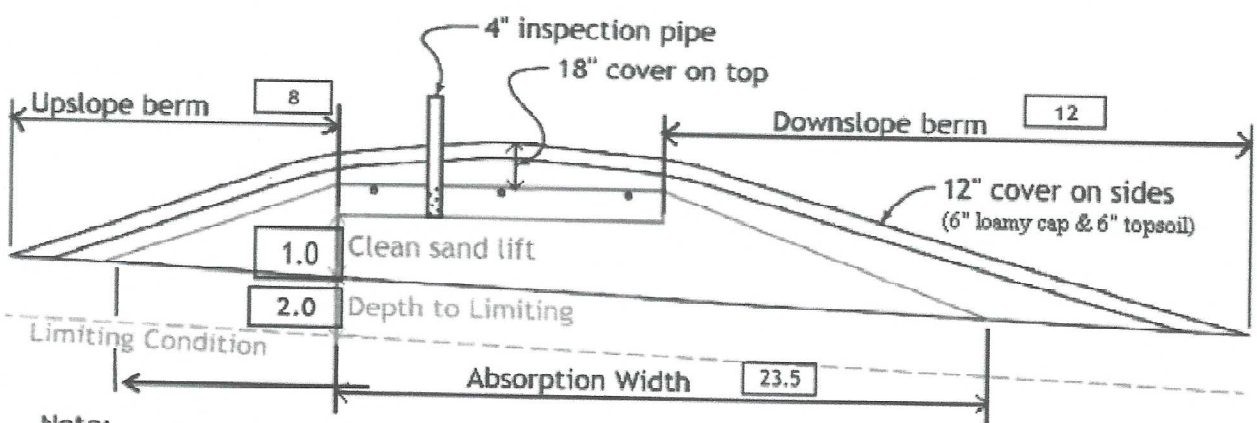
PID: 24-1-074300

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 Install 1650 Jacobson 2/Compartment tank 1120 / 533
Confirm bury depth of tanks
- 4) 1000 Gal Septic tank (code minimum) 1120 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) 7.0 doses per day (4 minimum)
- 11) 43 gallons per dose (treatment volume)
- 12) 1.50 inch diameter laterals must be used to meet "4x pipe volume" requirement 1.50 5x
- 13) 150 feet of 2.0 inch supply line leads to 26 gallons of drainback volume 2.00 3x
(Tip: "top feed" manifold to control the drainback)
- 14) 69 gallons TOTAL pump out volume (treatment + drainback)
- 15) 18 feet vertical lift from pump to mound laterals, leads to a:
- 16) 18 GPM @ 25 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 3.8 min ON (confirm pump rate with drawdown
(this delivers Average flow, =70% of Peak design flow) 5.1 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) 0.78 gpd/ft² Absorption area Soil Loading Rate, which gives a mound ratio of 1.5 (minimum)
 (this must match the soil boring log) desired mound ratio 1.5
- 24) 4 percent site slope (0-20% range) 4 (% downslope site slope, if different than upslope)
- 25) 24 inches, or 2.0 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) 12 inch, or 1.0 ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**
- 27) 15.0 ft. base absorption width (with sand beyond rockbed as follows):
 23.5 greater of: absorption width OR sand slope
- 28) 0.0 ft. upslope and sideslope sand upslope 5.4
 5.0 ft. Downslope sand down slope 8.2
- Individual slope ratios give BERM widths (topsoil beyond rockbed) of:
- 29) $3:1$ upslope ratio 8 ft. upslope berm
- 30) $3:1$ sideslope 10 ft. sideslope berms
- 31) $3:1$ downslope 12 ft. downslope berm
- 32) Overall Dimensions: 10.0 ft. wide by 25.0 ft. long Rock bed
 30 ft. wide by 45 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 9 inches under pipe, plus 20% gives 12 yd³ or *1.4= 17 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)
 7.7 up + 14.2 downslope + 6.4 ends + 11.1 under rock = 47 yd³ or *1.4= 66 ton
 plus 20%
- 35) Loamy Cap: 26 ft. by 41 ft. 6" deep, plus 20% gives 24 yd³ or *1.4= 34 ton
- 36) Topsoil: 30 ft. by 45 ft. 6" deep, plus 20% gives 30 yd³ or *1.4= 42 ton

Amounts

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

Jeff Brummer Designer Signature Brummer Septic LLC. Company L-1347 License# 8/5/2020 Date

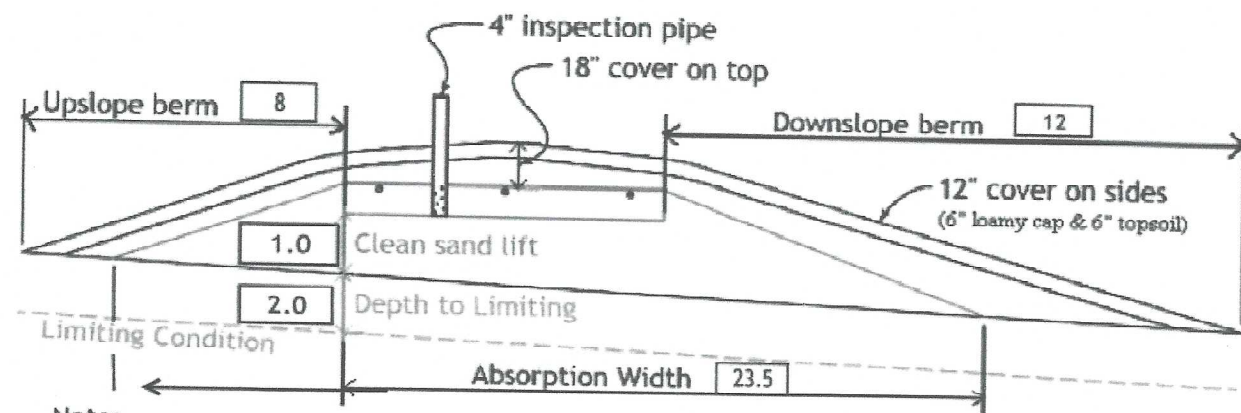
Installer Summary

1120 gallon Septic tank (minimum) Tank options: none
 Install **1650** Jacobson 2/Compartment tank **1120 / 533**
533 gallon Dose tank (minimum) at **12.69** gpi
18 GPM @ **25** 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 --> **3.8** minutes ON time & **5.1** 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
150 ft. of **2.0** inch supply line with **end feed** manifold connection
 (Tip: "top feed" manifold to control drainback)
12 inch, or **1.0** 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

23.5 ft. Total sand ABSORPTION width (minimum)
5.4 ft. upslope and sideslope (sand beyond rockbed, minimum)
8.2 ft. Downslope (sand beyond rockbed, minimum)

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

3:1 upslope ratio	8 ft. upslope berm
3:1 sideslope	10 ft. sideslope berms
3:1 downslope	12 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:	12.0 yd ³ or *1.4=	17 ton	9 inches under pipe
Mound Sand:	47 yd ³ or *1.4=	66 ton	calculation based on 3:1/4:1 slope from top of rockbed
Loamy Cap:	24 yd ³ or *1.4=	34 ton	6" deep
Topsoil:	30 yd ³ or *1.4=	42 ton	6" deep

INSPECTOR CHECKLIST - mound

30558 3/9th Ave. 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 _____ 1120 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 _____ 18 gpm 25 head VERIFY PUMP CURVE 3.8 min ON 5.1 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 25.0
- Sand lift depth 12 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)

- Absorption Sand beyond rock 5.4 upslope 8.2 downslope

- Bermed topsoil beyond rockbed 8 upslope 10 sideslope 12 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

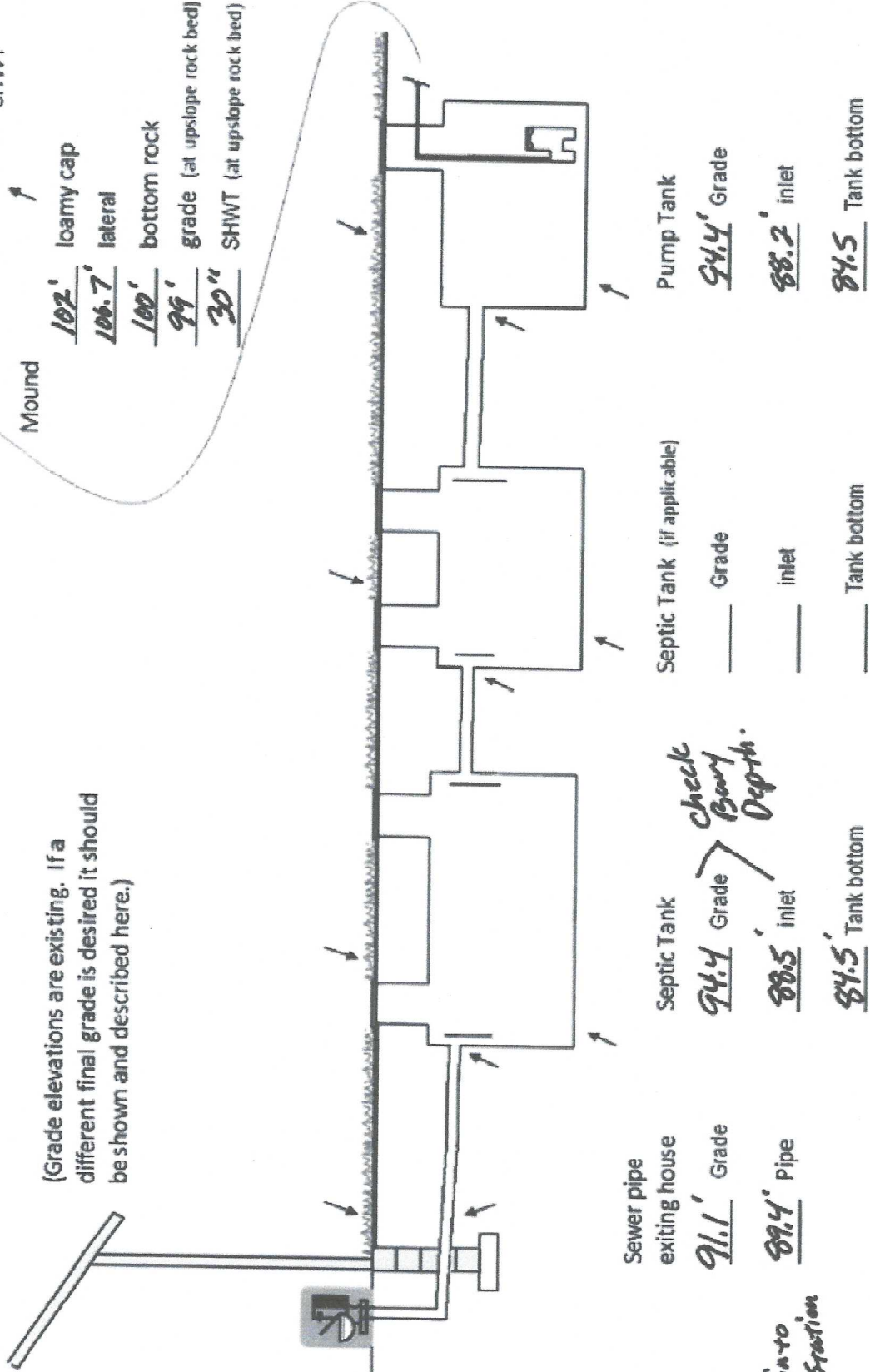
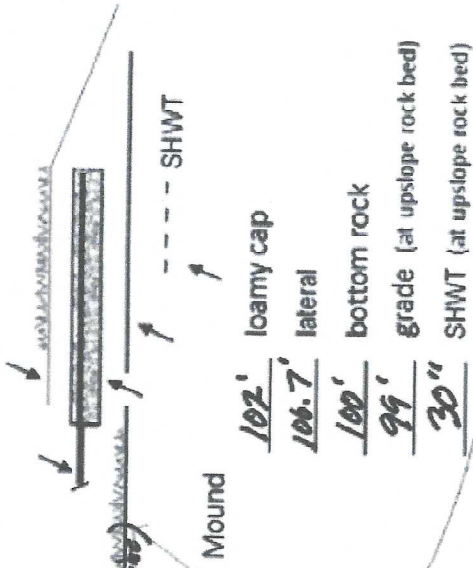
- Air inlet at end of laterals, and at top feed manifold if necessary. VERIFY
- clean outs (no hard 90's)
- 4" inspection pipe to bottom of rock, anchored VERIFY

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

System Elevations

Bm = 100' benchmark Nail on Power Pole (North Post. 100)

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



Sewer pipe exiting house 91.1' Grade

89.4' Pipe

pipe into pump station

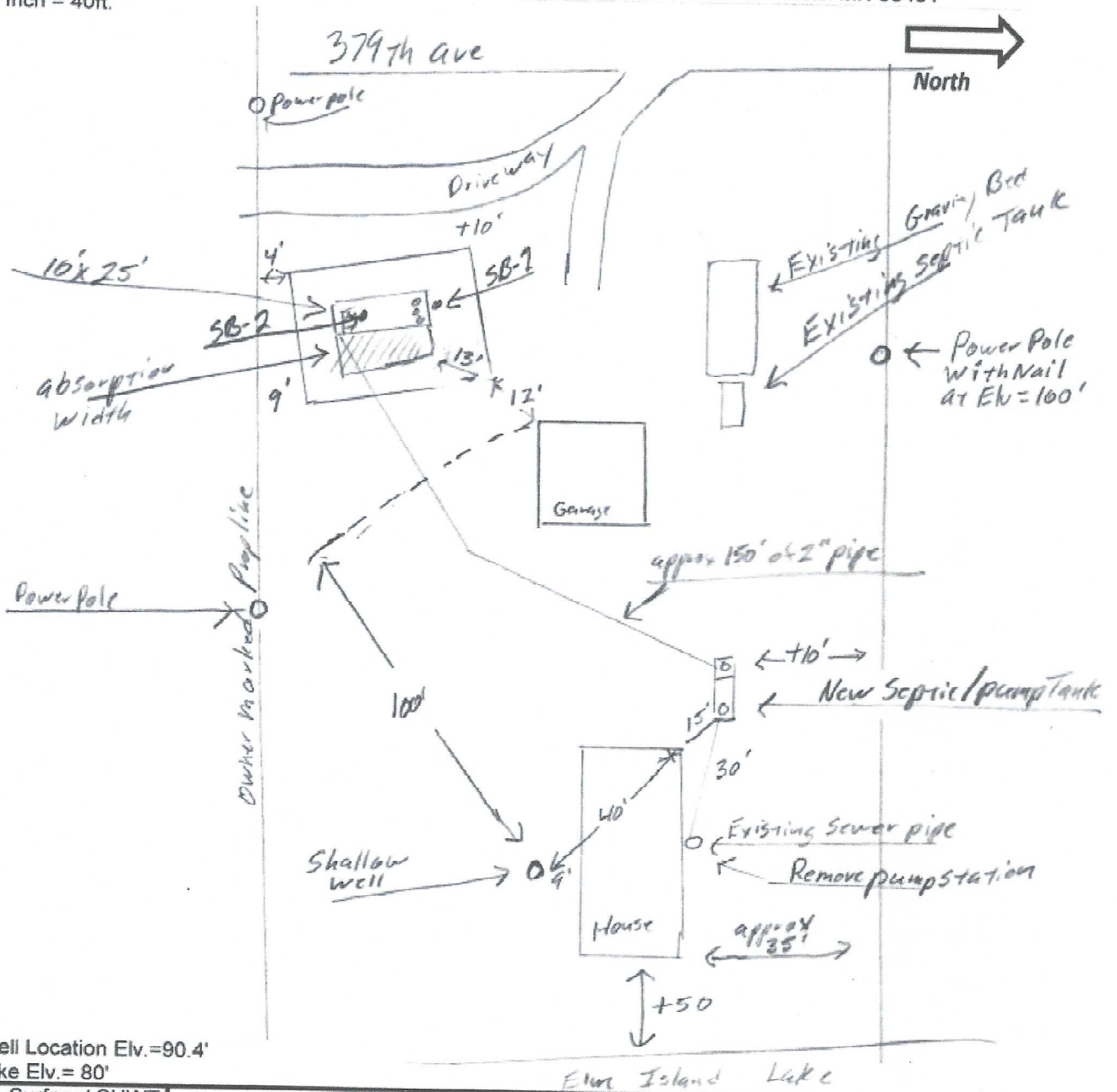
Septic Tank 94.4' Grade } *check Barry Depth.*
88.5' inlet
84.5' Tank bottom

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

Pump Tank 94.4' Grade
88.2' inlet
84.5' Tank bottom

{ Design Drawing }

Property Owner: David Sanders Date: 8/5/20 Designer's Initials: JB
 Parcel ID. Number: 24-1-074300 Address: 30558 379th Ave. Aitkin MN 56431
 one Inch = 40ft.



Grade at well Location Elv. = 90.4'
 Approx. Lake Elv. = 80'

Soil Bore 1	Surface/ SHWT 98.4' / 30"	Nail on power pole = Bench Mark 100'	Existing Grade
Soil Bore 2	98.7' / 38"	Bench Mark 100'	Upslope Edge of Rockbed Elv. = 99'
Soil Bore 3		Ground Elv. BM 98.3'	Bottom of Rockbed Elv. = 100'
		Ground Elv. Tank 94'	Top of Washed Sand Elv. = 100'
		Existing house 91.1'	Elev. Of Sewer pipe at Cabin Elv. = 89.4'
	Grade At		

Please show all that apply (Existing)

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

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

- | | |
|---------------------------|-----------------------------------|
| Disturbed/Compacted Areas | Access Route for Tank Maintenance |
| Component Location | Property Lines |
| OHW ordinary high water | Structures |
| Lot Easements | Setbacks |

Mound Design Notes - Aitkin county

Property Owner: David Sanders

Date: 8/5/20

Site Address: 30558 379th Ave. Aitkin MN 56431

PID: 24-1-074300

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

- 1 This is a type I mound for a 2 bedroom House. Existing Shallow well location is on the West side of House.
- 2 Existing Septic tank to be pumped, collapsed and removed. Existing drainfield to be abandon.
- 3 South property line was marked by Owner, lot will be surveyed soon.
- 4 Bench Mark Elevation is a nail on a power pole, on North Property line
- 5 Install a 2/Compartment tank for gravity flow from house (existing sewer pipe at Elv. = 89.4')
Installer to Confirm bury depth of tanks. May be up to 7 ft deep.
Installer may have to use a Brown /Wilbert tank because of bury depth.
Remove pump station on North side of house, install clean-out near house.
Used a 3:1 berm ratio to fit mound between property line and garage.
Installer to keep absorption width 25 ft from garage at NE corner of mound.
Absorption width can be kept to 5 ft down slope in NE corner.
- 6 Elevation contour of rock bed upslope edge is 99'.
The area size of the rock bed is 10' x 25' . Absorption area is 25' x 23.5'.
Sand absorption area is 5.4 ft. up slope + 10 ft. rockbed + 8.2 downslope = approx. 23.5 ft. wide sand base.
Berms are 8ft. Upslope, 12ft. Down slope, 10ft. Rock bed = approx. 30ft. Wide.
Overall mound size is approx. 30' wide x 45' long and approx. 3' high. End Berms are 10 ft wide.
- 7 The bench mark is the nail on the Power Pole at North property line, 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 Install a 2/Compartment tank with 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.
Installer to Confirm bury depth of tank.
- 10 Recommend Installing an Effluent filter on septic tank outlet, install electric alarm on filter.
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 a 4" inspection pipe to bottom of rock bed, secure in rock bed and raise to above final grade.

Designed to Aitkin Co. and MPCA recommendations and requirements.

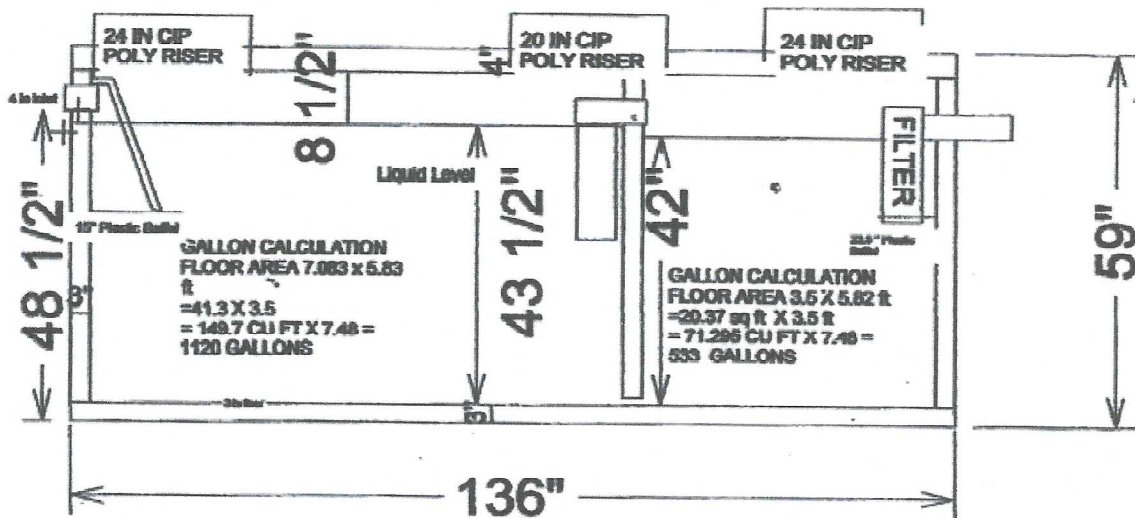
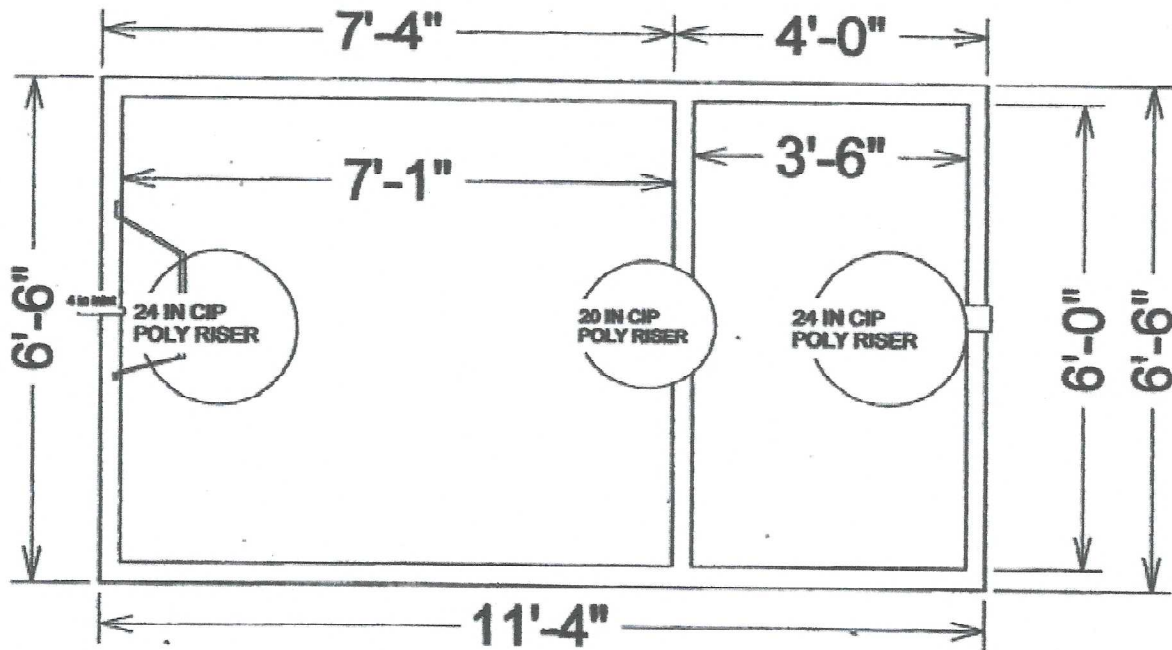

Designer Signature

Brummer Septic LLC.
Design Company

L-1347
License#

1650 Gallon 2 Compartment Septic Tank

TOP VIEW



$533 / 42" = 12.69 \text{ GPI}$

SIDE VIEW

Drawings Owned BY Jacobson Precast, Inc.
36641 HWY 169, Aitkin, Mn 56431