

Preliminary & Field Evaluation Form

www.SepticResource.com vers 12.4

Owner Information			
Date	<u>5/26/2021</u>	Sec / Twp / Rng	<u>S-29, T-49, R-22</u>
Parcel ID	<u>10-0-047402</u>	LUG (county, city, township)	<u>Aitkin Co.</u>
Property Owner:	<u>Gerald Terano</u>	Owners address (if different)	
Property Address:	<u>14107 480th St. Tamarack MN 55787</u>		<u>9083 Jackson St. NE</u>
City / State / Zip:			<u>Blaine MN 55434</u>

Flow Information and Waste Type / Strength			
Estimated Design flow	<u>300</u>	Anticipated Waste strength	<input type="checkbox"/> Hi Strength <input checked="" type="checkbox"/> Domestic
Comments: Deep Well (617000)		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 type="checkbox"/> Yes	<input checked="" 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 type="checkbox"/> Yes	<input checked="" 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	<hr/> <hr/>				

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>0.60</u>		Percolation rate (if applicable)

Depth/elev to SHWT	<u>12"</u>		Flooding or run-on potential
			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth to system bottom maximum (or elev minimum)	<u>(+ 24"</u>		(comments)
Depth/elev to standing water (if applicable)	_____		Flood elevation (if applicable)

Depth/elev to bedrock (if applicable)	_____		Elevation of ordinary high water level (if applicable)

Soil Survey information determined (see attachment)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Floodplain designation and elev - 100 yr/10 yr (if applicable)

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>Gerald Terano</u>	Date <u>5/26/2021</u>
Property Address / PID: <u>14107 480th St. Tamarack MN 5578'</u>	

Soil Survey Information	
<input type="checkbox"/> refer to attached soil survey	
Parent mat'l's:	<input checked="" 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>625</u> slope <u>3</u> % direction- <u>west</u>

Soil Log #1							
		<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation <u>98'</u>	Depth to SHWT <u>14"</u>		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 8	Topsoil Loam	<35	10YR3/2		Loose	Loose	Granular
8 - 14	Loam	<35	10YR5/4		Friable	Loose	Granular
14 - 16	Loam	<35	10YR5/3	7.5YR5/6	Friable	Loose	Granular

Comments:

14107 480th St. Tamarack MN 55787

Soil Log #2

		<input type="checkbox"/> Boring	<input checked="" type="checkbox"/> Pit	Elevation <u>97.9'</u>		Depth to SHWT <u>14"</u>	
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 8	Topsoil Loam	<35	10YR3/2		Loose	Loose	Granular
8 - 14	Loam	<35	10YR5/4		Friable	Loose	Granular
14 - 16	Loam	<35	10YR5/3	7.5YR5/6	Friable	Loose	Granular

14107 480th St. Tamarack MN 55787

Soil Log #3

		<input type="checkbox"/> Boring	<input checked="" type="checkbox"/> Pit	Elevation <u>97.8'</u>		Depth to SHWT <u>12"</u>	
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 8	Topsoil Loam	<35	10YR3/2		Loose	Loose	Granular
8 - 12	Loam	<35	10YR5/4		Friable	Loose	Granular
12 - 16	Loam	<35	10YR5/3	7.5YR5/6	Friable	Loose	Granular
		<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

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 Company

L-1347
 License #

Mound Design - Aitkin county

Property Owner: Gerald Terano

Date: 5/26/2021

Site Address: 14107 480th St. Tamarack MN 55787

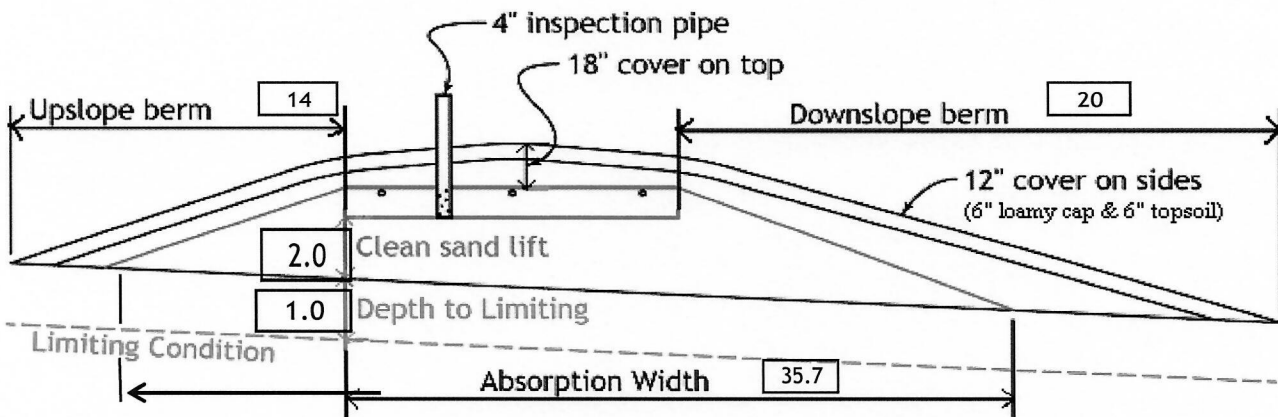
PID: 10-0-047402

Comments: _____

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

- 1) bedroom Type Residential System
- 2) GPD design flow
- 3) Garbage disposal or pumped to septic Install 1650 Jacobson 2/Compartment tank
- 4) Gal Septic tank (code minimum) Gal Septic tank (design size / LUG req'd)
Tank options: none
- 5) GPD/ft² mound sand loading rate contour loading rate of req's a min ft. long rockbed
- 6) ft rockbed width ft rockbed length
- 7) ft lateral spacing ft perforation spacing (maximum of 3 for both)
 manifold connection
- 8) laterals feet long perfs / lateral perfs total
(1/2 a perf means the first perf starts at the middle feed manifold)
- 9) inch perfs at feet residual head gives gpm flow rate per perforation
for this perf size & spacing, & pipe size on line 12, max perfs/lateral = , line #8 must be less --> OK
- 10) doses per day (4 minimum)
- 11) gallons per dose (treatment volume) 1.50 5x
- 12) inch diameter laterals must be used to meet "4x pipe volume" requirement 2.00 3x
- 13) feet of inch supply line leads to gallons of drainback volume
(Tip: "top feed" manifold to control the drainback)
- 14) gallons TOTAL pump out volume (treatment + drainback)
- 15) feet vertical lift from pump to mound laterals, leads to a:
- 16) GPM @ feet of head, Pump requirement (note: >50gpm may require an extra 3-6' of head)
- 17) gal Dose tank (code minimum) gal Dose tank (design size / LUG req'd) at gpi
leads to a
- 18) inch swing on Demand float, or timed dosing of min ON (confirm pump rate with drawdown
(this delivers Average flow, =70% of Peak design flow) hrs OFF test and adjust as necessary)
- 19) inches from bottom of tank to "Pump OFF" float
- 20) inches from bottom of tank to "Pump ON" float, or inches to "Timer ON" float if time dosed
- 21) inches from bottom of tank to "Hi Level" float, or inches to "Hi Level" float if time dosed
- 22) gallons reserve capacity (after High Level Alarm is activated)

- 23) gpd/ft² Absorption area Soil Loading Rate, which gives a mound ratio of (minimum)
 (this must match the soil boring log) desired mound ratio
- 24) percent site slope (0-20% range) (% downslope site slope, if different than upslope)
- 25) inches, or ft. to Redox or other limiting condition (need at least 12" to be a Type I)
 Treatment zone contains inches of 0% soil credit, and inches of 50% soil credit. Giving a:
- 26) inch, or ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**
- 27) ft. base absorption width (with sand beyond rockbed as follows):
 greater of: absorption width OR sand slope
- 28) ft. upslope and sideslope sand upslope
 ft. Downslope sand down slope
- Individual slope ratios give BERM widths (topsoil beyond rockbed) of:
- 29) upslope ratio ft. upslope berm
- 30) sideslope ft. sideslope berms
- 31) downslope ft. downslope berm
- 32) Overall Dimensions: ft. wide by ft. long Rock bed
 ft. wide by 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:
 ft. by ft. by inches under pipe, plus 20% gives yd³ or *1.4= 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)
 up + downslope + ends + under rock = yd³ or *1.4= ton
 plus 20%
- 35) Loamy Cap:
 ft. by ft. 6" deep, plus 20% gives yd³ or *1.4= ton
- 36) Topsoil:
 ft. by ft. 6" deep, plus 20% gives yd³ or *1.4= ton

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


 Designer Signature

Brummer Septic LLC.
 Company

L-1347
 License#

5/26/2021
 Date

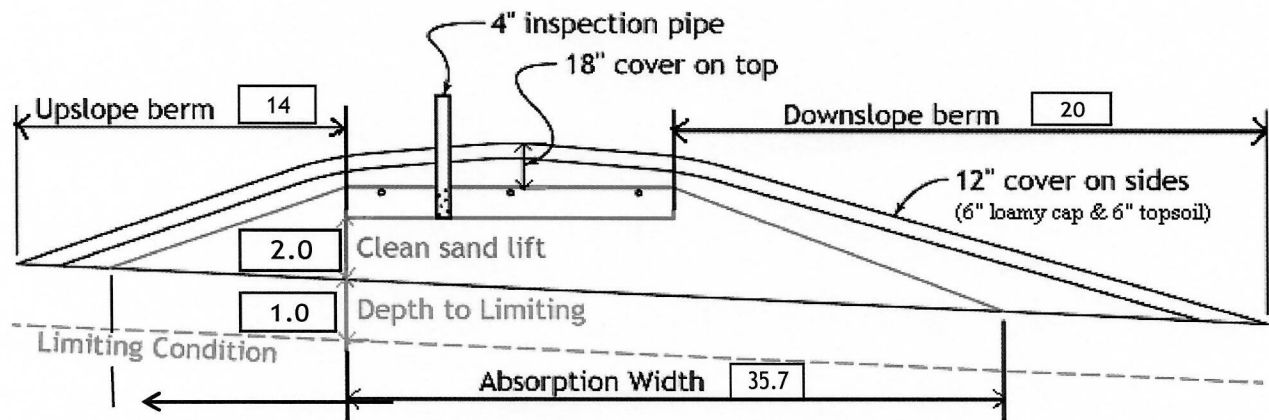
Installer Summary

- 1000 gallon Septic tank (minimum) Tank options: none
- 533 gallon Dose tank (minimum) at 12.69 gpi
- 18 GPM @ 21 ft. of head, Pump required
- 4.1 inch swing on Demand float which translates to roughly 3.1 inches of float tether length
if time dosing is required --> 2.9 minutes ON time & 5.1 hours OFF time
- 16 inches from bottom of tank to "pump ON" float, or 12 inches to "timer ON" float
- 19 inches from bottom of tank to "Hi Level Alarm" or 29 inches to "Hi level alarm" if time dosed
- 50 ft. of 2.0 inch supply line with end feed manifold connection
(Tip: "top feed" manifold to control drainback)
- 24 inch, or 2.0 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

- 35.7 ft. Total sand ABSORPTION width (minimum)
- 10.7 ft. upslope and sideslope (sand beyond rockbed, minimum)
- 15.0 ft. Downslope (sand beyond rockbed, minimum)

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

- 4:1 upslope ratio 14 ft. upslope berm
- 4:1 sideslope 17 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:	12.0 yd ³ or *1.4=	17 ton	9 inches under pipe
Mound Sand:	136 yd ³ or *1.4=	190 ton	calculation based on 3:1/4:1 slope from top of rockbed
Loamy Cap:	49 yd ³ or *1.4=	69 ton	6" deep
Topsoil:	58 yd ³ or *1.4=	81 ton	6" deep

INSPECTOR CHECKLIST - mound

1410/ 480th St. Tamarack MN 55787

- 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 _____ 18 gpm 21 head VERIFY PUMP CURVE 2.9 min ON 5.1 hr OFF

- float setting drop 4.1 inches at 12.7 gpi "DESIGNED" 3.1 inches approx float tether length
52.0 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 24 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)

- Absorption Sand beyond rock 10.7 upslope 15.0 downslope

- Bermed topsoil beyond rockbed 14 upslope 17 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

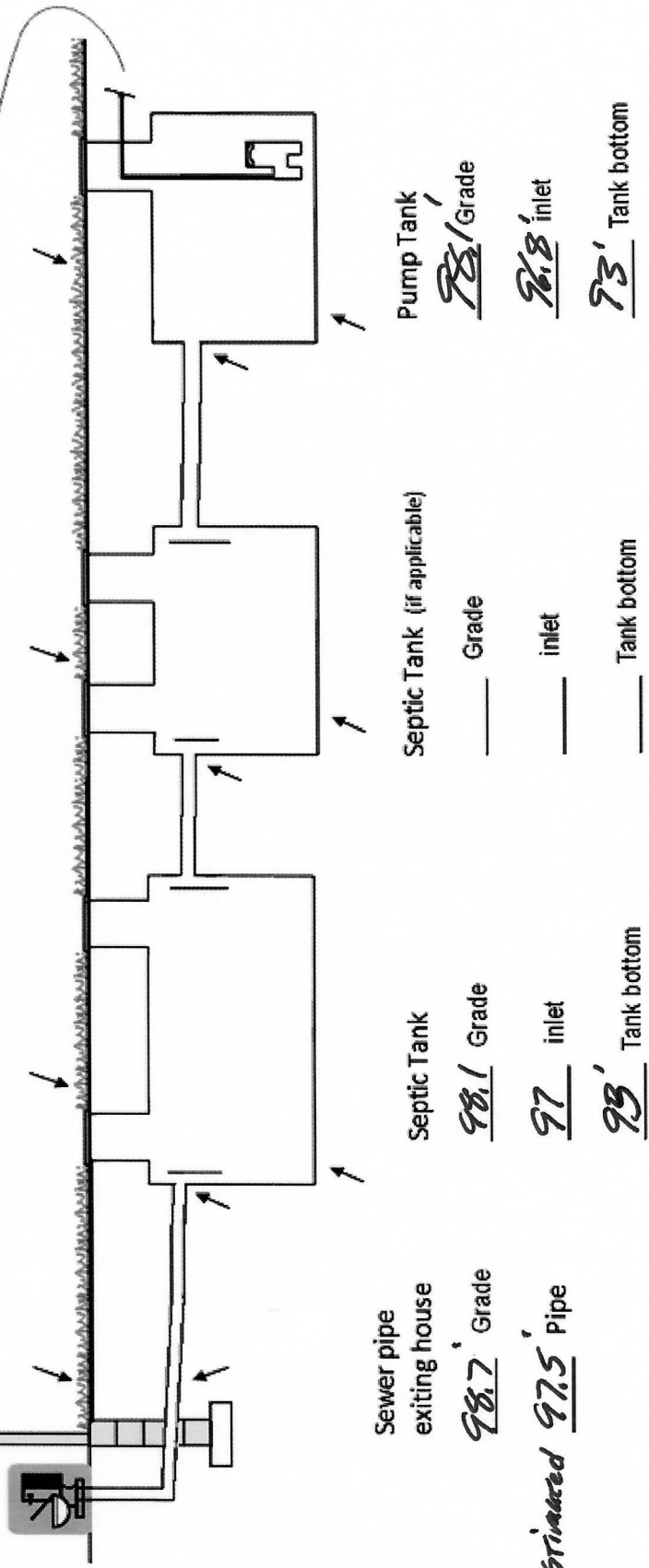
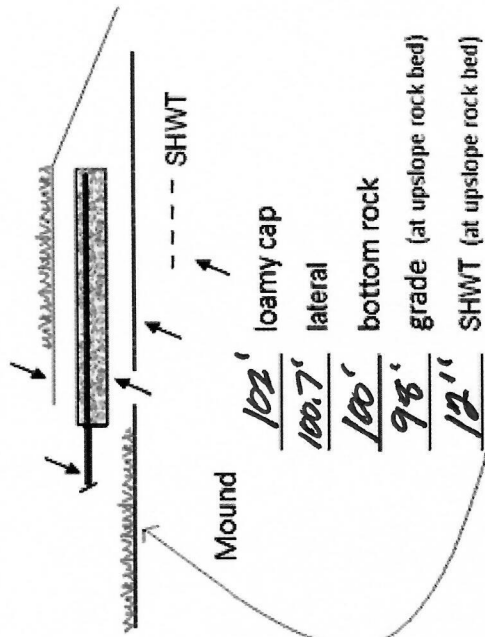
- Air inlet at end of laterals, and at top feed manifold if necessary. VERIFY
- clean outs (no hard 90's)
- 4" inspection pipe to bottom of rock, anchored VERIFY

- 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 Tree NW of mound
 Top of Deep Well Cap Elv = 99.6

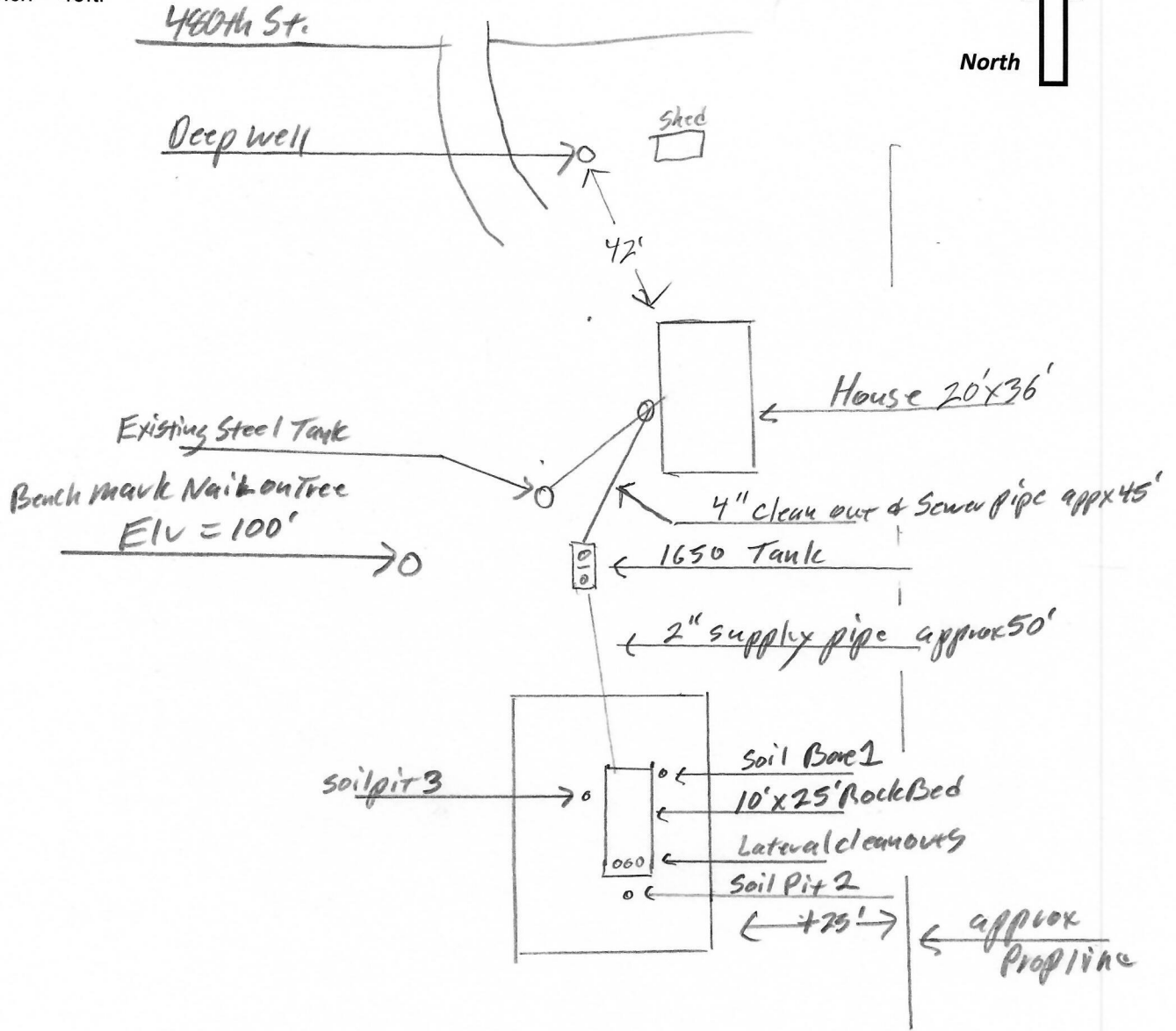
(Grade elevations are existing. If a different final grade is desired it should be shown and described here.)



Estimated 97.5' Pipe

{ Design Drawing }

Property Owner: Gerals Terano Date: 5/26/21 Designer's Initials: JB
 Parcel ID. Number: 10-0-047402 Address: 14107 480th St. Tamarack MN 55787
 one Inch = 40ft.



Surface/ SHWT		Nail on Tree = Bench Mark 100'		Existing Grade	
Soil Bore 1	98' / 14"	Bench Mark	100'	Upslope Edge of Rockbed	Elv. = 98'
Soil Pit 2	97.9' / 14"	Ground Elv. BM	97.7'	Bottom of Rockbed	Elv. = 100'
Soil Pit 3	97.8' / 12"	Ground Elv. Tank	98.1'	Top of Washed Sand	Elv. = 100'
	Ground at	house	98.7'	Existing Septic Tank Inlet	Elv. = 96.9'

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

Component Location

OHW ordinary high water

Lot Easements

Access Route for Tank Maintenance

Property Lines

Structures

Setbacks

Mound Design Notes - Aitkin county

Property Owner: Gerals Terano

Date: 5/26/21

Site Address: 14107 480th St. Tamarack MN 55787

PID: 10-0-047402

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 deep well location is NW of House.
- 2 Existing Tank is a steel tank, pump, collapse, fill or remove.
- 3 Abandon any drainfield that may be there.
- 4 Bench Mark Elevation = 100' is a nail on a tree near NW corner of mound area.
- 5 Install Jacobson 1650 Compartment tank for gravity flow from house, Install clean-out near house.
- 6 Elevation contour of rock bed upslope edge is 98'.
The area size of the rock bed is 10' x 25' . Absorption area is 25' x 35.7'.
Sand absorption area is 10.7 ft. up slope + 10 ft. rockbed + 15 downslope = approx. 35.7 ft. wide sand base.
Berms are 14ft. Upslope, 20ft. Down slope, 10ft. Rock bed = approx. 44ft. Wide.
Overall mound size is approx. 44' wide x 59' long and approx. 4' high. End Berms are 17 ft wide.
- 7 The bench mark is the nail on the 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. 52 gallons per dose, 4.1 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 finished Grade (Recommend 4" above).
- 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.

Designed to Aitkin Co. and MPCA recommendations and requirements.

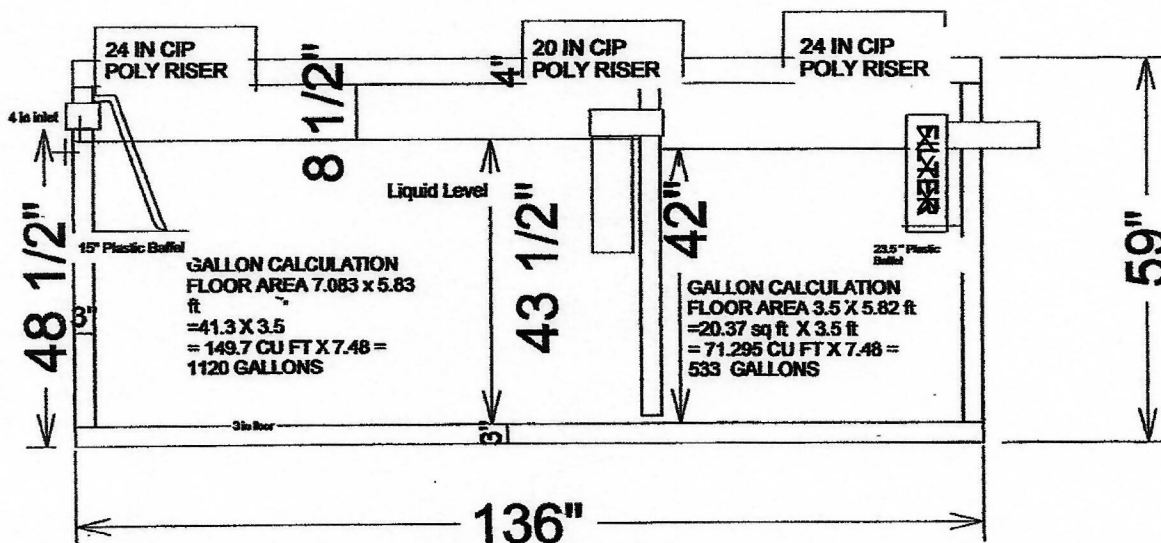
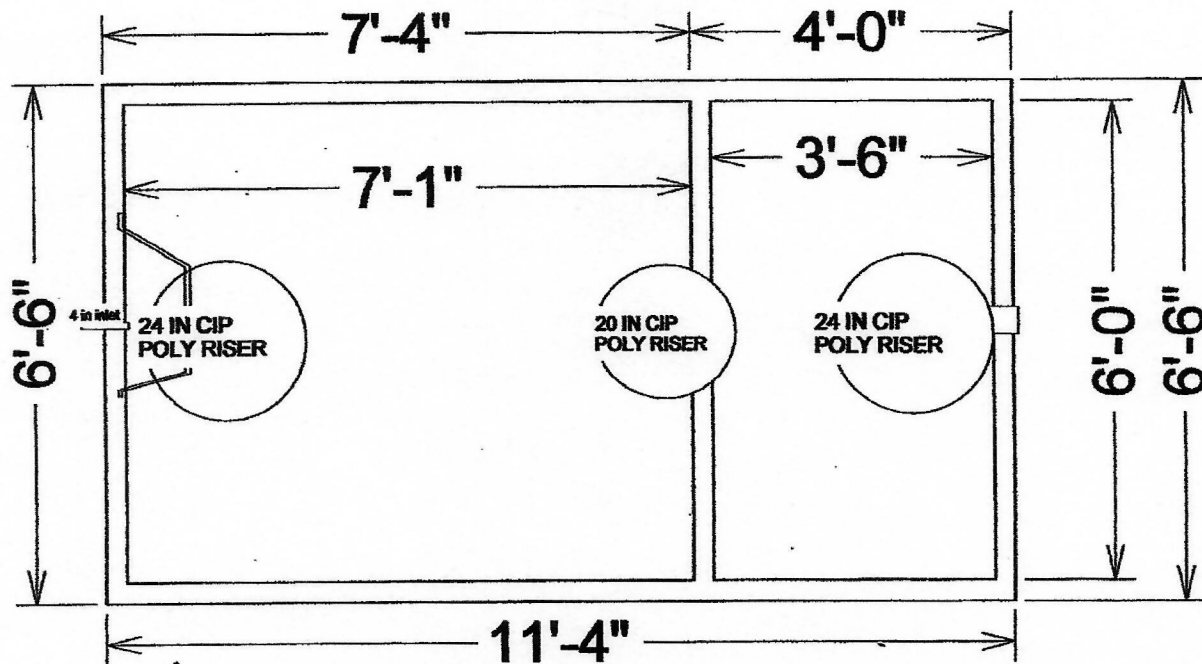

Designer Signature

Brummer Septic LLC.
Design Company

L-1347
License#

1650 Gallon 2 Compartment Septic Tank

TOP VIEW



SIDE VIEW

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

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



Minnesota Well Index

General Information

Unique Well ID:	617000	Well Name:	GLANDEN, LEE	County:	Aitkin	Aquifer:	Quat. buried artes. aquifer
Well Elevation (msl in feet):	1270	Drilled Depth (ft):	126	Well Completed (ft):	126	Date Drilled:	07/17/1999
Township:	49	Range:	22	Dir:	W	Section:	29
Subsection:	AAABCA	Use:	domestic	Well Status:	Active	Depth To Bedrock:	
Driller:	Hasskamp Bros. Well	Entry Date:	04/28/2000	Update Date:	11/29/2017		

Related Resources:

[Go to MN Well Index Map](#) [Well Log Report](#) [Scanned Record\(s\)](#) [Stratigraphy Report](#)

[More Details](#) [Stratigraphy](#) [Address](#) [Chemical Data](#) [Construction](#) [Pump Test](#) [Static Water](#) [Comments](#) [Location Changes](#)

Overview Map

Description	From(ft)	To(ft)	Color	Hardness	Lith Primary	Lith Secondary	Interpretation
CLAY	0	25	BROWN	MEDIUM	CLAY		clay-brown
SAND	25	40	BROWN	MEDIUM	SAND		sand-brown
MUD	40	54	GRAY	MEDIUM	MUDD		cly/snd/slt-no peb.-gry
CLAY	54	60	GRAY	MEDIUM	CLAY		clay-gray
CLAY & ROCKS	60	116	BROWN	MEDIUM	CLAY		pebbly sand/silt/clay-brown
SAND	116	126	BROWN	MEDIUM	SAND		sand-brown



Detailed Parcel Report

Parcel Number: 10-0-047402

General Information

House

Township/City: HAUGEN TWP
Taxpayer Name: TERANO, GERALD ETAL
Taxpayer Address: 9083 JACKSON ST NE
 BLAINE MN 55434
Property Address: 14107 480th St
Township: 49 **Lake Number:** 0
Range: 22 **Lake Name:**
Section: 29 **Acres:** 6.84
Green Acres: No **School District:** 4.00
Plat:
Brief Legal Description: N 990 FT OF NE-NE LESS W 640 FT & LESS E 360 FT & LESS .46 AC CO RD R/W

Tax Information

Class Code 1: Non-Comm Seasonal Residential Recreational
Class Code 2: Unclassified
Class Code 3: Unclassified
Homestead: Non Homestead
Assessment Year: 2021

Estimated Land Value:	\$31,400.00
Estimated Building Value:	\$27,700.00
Estimated Total Value:	<u>\$59,100.00</u>
Prior Year Total Taxable Value:	\$56,600.00
Current Year Net Tax (Specials Not Included):	\$464.00
Total Special Assessments:	\$0.00
**Current Year Balance Not Including Penalty:	\$464.00
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.

Leland Grander



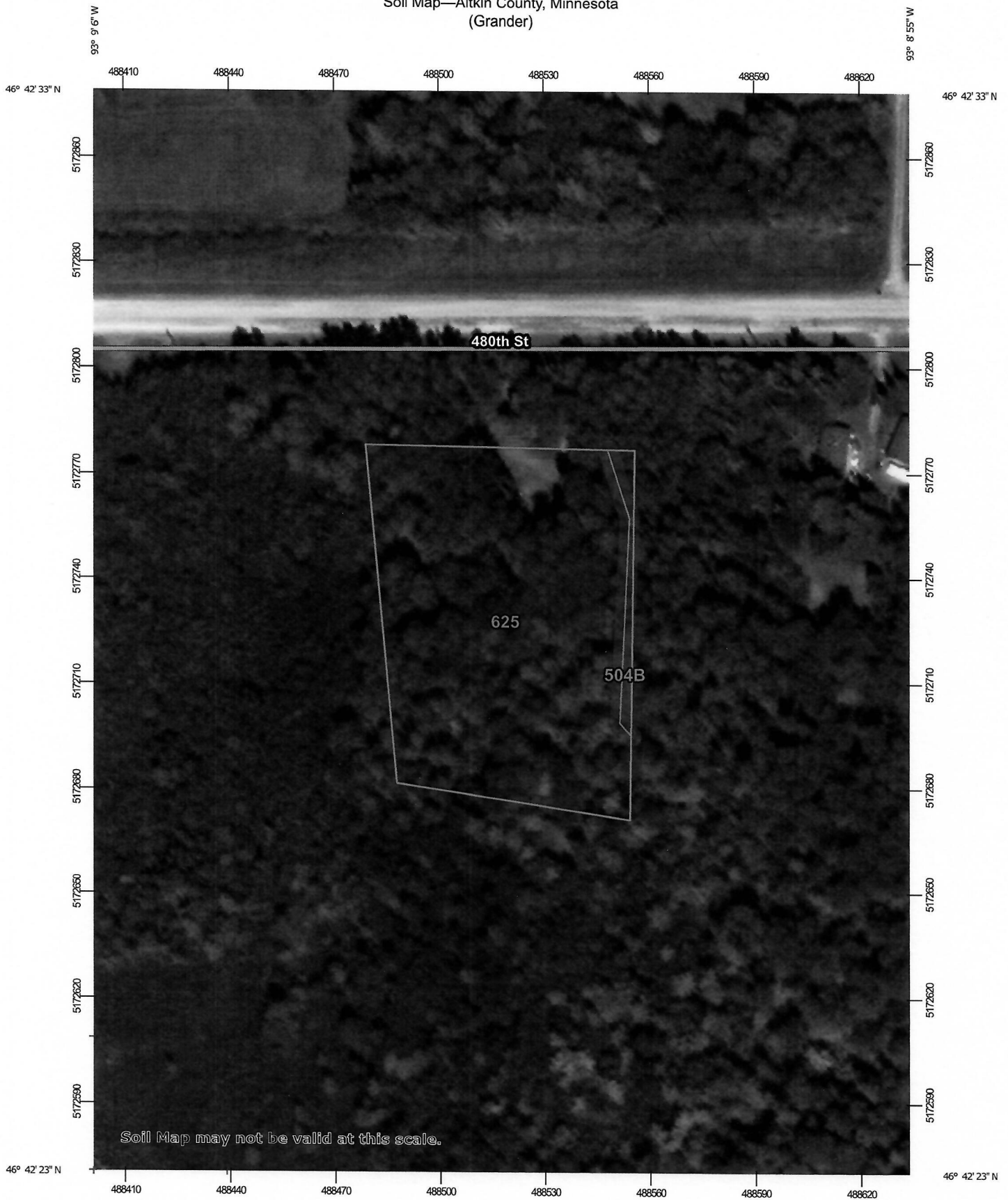
Date: 4/29/2021

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.

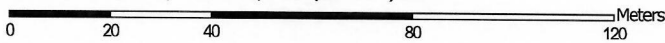
1:3.546

0 112.5 225 ft 1 inch = 296 feet

Soil Map—Aitkin County, Minnesota
(Grander)



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

625—Sandwich loamy sand

Map Unit Setting

National map unit symbol: gjj4
Elevation: 980 to 1,310 feet
Mean annual precipitation: 20 to 27 inches
Mean annual air temperature: 37 to 41 degrees F
Frost-free period: 95 to 105 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Sandwich

Setting

Landform: Swales on moraines
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Sandy outwash over loamy till

Typical profile

E - 0 to 6 inches: loamy sand
Bw,E' - 6 to 34 inches: sand
2E/B,2Btg - 34 to 55 inches: loam
2Cg - 55 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Available water capacity: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Forage suitability group: Level Swale, Low AWC, Acid (G088XN007MN)
Other vegetative classification: Level Swale, Low AWC, Acid (G088XN007MN)

Hydric soil rating: Yes

Minor Components

Dusler and similar soils

Percent of map unit: 3 percent

Hydric soil rating: No

Cutaway and similar soils

Percent of map unit: 3 percent

Hydric soil rating: No

Alstad and similar soils

Percent of map unit: 3 percent

Hydric soil rating: No

Northwood and similar soils

Percent of map unit: 3 percent

Landform: Depressions

Hydric soil rating: Yes

Stuntz and similar soils

Percent of map unit: 3 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: Aitkin County, Minnesota

Survey Area Data: Version 21, Jun 4, 2020