Preliminary & Field Evaluation Form

www.SepticResource.com vers 12.4

Owner Information

Date	8/27/2021	Sec / Twp / Rng	S-13, T-49, R-24
Parcel ID	39-0-023906	LUG (county, city, township)	Aitkin Co.
Property Owner:	Timothy Nistler	Owners address (if different)	
Property Address:	Near 22168 494th Ln McGregor	310 Alder Ave. Apt A	
City / State / Zip:		McGregor MN 55760	

Flow Information and Waste Type / Strength

Estimated Design flow: 600

Comments: Gravity flow out lower level

May be Owner install

Anticipated Waste strength	☐ Hi Strength	☑ Domestic
Any Non-Domestic Waste	☐ Yes (class V)	☑ No
Sewage ejector/grinder pump	☐ Yes	☑ No
Water softener	☐ Yes	☑ No
Garbage Disposal	☐ Yes	☑ No
Daycare / In home business	☐ Yes	☑ No

Site Information

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

Construction related issues

Soil Information

Evidence of site:

Cut	☐ Yes	☑ No
Filled	☐ Yes	☑ No
Compacted	☐ Yes	☑ No
Disturbed	☐ Yes	☑ No

Original soils ☑ Yes ☐ No

Soil logs completed and attached ☑ Yes ☐ No

Perk test completed and attached (if applicable) ☐ Yes ☑ No

Soil loading rate (gpd/ft^2) 0.60

Percolation rate (if applicable) _____

Depth/elev to SHWT 16"

Flooding or run-on potential (comments) ☐ Yes ☐ No

Depth to system bottom maximum (or elev minimum) (+24")

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) ☐ Yes ☐ 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: Timothy Nistler Date 8/27/2021

Property Address / PID: Near 22168 494th Ln McGregor

Soil Survey Information

☐ refer to attached soil survey

Parent matl's: ☑ Till ☐ Outwash ☐ Lacustrine ☐ Alluvium ☐ Organic ☐ Bedrock

landscape position: ☐ Summit ☐ Shoulder ☑ Side slope ☐ Toe slope

soil survey map units: 204B slope 4 % direction- South

Soil Log #1

☐ Boring ☑ Pit Elevation 98' Depth to SHWT 16"

Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 7	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular
7 - 16	Loam	<35	10YR5/4		Loose	Loose	Granular
16 - 20	Loam	<35	10YR5/4	7.5YR5/6	Loose	Loose	Granular
20	Clay Loam	<35	10YR4/4		Friable	Weak	Blocky

Comments:

Near 22168 494th Ln McGregor — **Soil Log #2**

☐ Boring ☑ Pit Elevation 98' Depth to SHWT 18"

Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 7	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular
7 - 18	Loam	<35	10YR5/4		Loose	Loose	Granular
18 - 26	Loam	<35	10YR5/4	7.5YR5/6	Loose	Loose	Granular
26	Clay Loam	<35	10YR4/4		Friable	Weak	Blocky

Near 22168 494th Ln McGregor — **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.	L-1347
	Company	License #

2011 purple code

Mound Design - Aitkin county

www.SepticResource.com (vers 15.2)

Property Owner: Timothy Nistler **Date:** 8/27/2021

Site Address: Near 22168 494th Ln McGregor **PID:** 39-0-023906

Comments:

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

1) [4] bedroom Type [I] [Residential] System

2) [600] GPD design flow

3) [No] Garbage disposal or pumped to septic Install 1650 Jacobson 2/Compartment tank

4) [1000] Gal Septic tank (code minimum) [1000] Gal Septic tank (design size / LUG req'd)
Tank options: [none]

5) [1.2] GPD/ft^2 mound sand loading rate contour loading rate of [12] req's a min [50] ft. long rockbed

6) [10.0] ft rockbed width [50.0] 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 [48.0] feet long [17.0] perfs / lateral [51] perfs total
(1/2 a perf means the first perf starts at the middle feed manifold)

9) [7/32] inch perfs at [1] feet residual head gives [0.56] gpm flow rate per perforation

for this perf size & spacing, & pipe size on line 12, max perfs/lateral = [19], line #8 must be less --> OK

10) [7.0] doses per day (4 minimum)

11) [86] 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) [100] feet of [2.0] inch supply line leads to [17] gallons of drainback volume
(Tip: "top feed" manifold to control the drainback)

14) [103] gallons TOTAL pump out volume (treatment + drainback)

15) [18] feet vertical lift from pump to mound laterals, leads to a:

16) [29] GPM @ [26] 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) [8.1] inch swing on Demand float, or timed dosing of [3.6] 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) [20] inches from bottom of tank to "Pump ON" float, or [12] inches to "Timer ON" float if time dosed

21) [23] inches from bottom of tank to "Hi Level" float, or [33] inches to "Hi Level" float if time dosed

22) [241] gallons reserve capacity (after High Level Alarm is activated)

23) 0.60 gpd/ft² Absorption area Soil Loading Rate, (this must match the soil boring log) which gives a mound ratio of 2 (minimum) desired mound ratio 2.0

24) 4 percent site slope (0-20% range) 4 (% downslope site slope, if different than upslope)

25) 12 inches, or 1.0 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) 24 inch, or 2.0 ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**

27) 20.0 ft. base absorption width (with sand beyond rockbed as follows:)

36.5 greater of: absorption width OR sand slope

28) 0.0 ft. upslope and sideslope sand upslope 10.4

10.0 ft. Downslope sand down slope 16.2

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

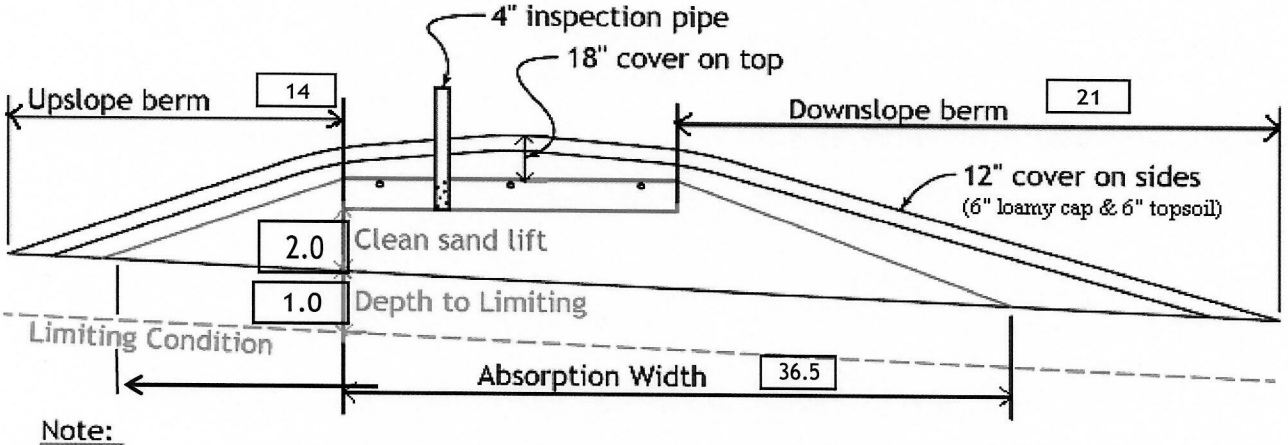
29) 4:1 upslope ratio 14 ft. upslope berm

30) 4:1 sideslope 18 ft. sideslope berms

31) 4:1 downslope 21 ft. downslope berm

32) Overall Dimensions: 10.0 ft. wide by 50.0 ft. long Rock bed

45 ft. wide by 86 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 50.0 ft. by 9 inches under pipe, plus 20% gives 23 yd³ or *1.4= 32 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)

44.9 up + 79.5 downslope + 17.1 ends + 40.7 under rock = 219 yd³ or *1.4= 306 ton
plus 20%

35) Loamy Cap:

41 ft. by 82 ft. 6" deep, plus 20% gives 75 yd³ or *1.4= 105 ton

36) Topsoil:

45 ft. by 86 ft. 6" deep, plus 20% gives 86 yd³ or *1.4= 120 ton

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

Designer Signature	Company	License#	Date
	Brummer Septic LLC.	L-1347	8/27/2021

Installer Summary

1000 gallon Septic tank (minimum)

Tank options: none

Install 1650 Jacobson 2/Compartment tank at 12.69 gpi

533 gallon Dose tank (minimum)

29 GPM @ 26 ft. of head, Pump required

8.1 inch swing on Demand float which translates to roughly 5.1 inches of float tether length

if time dosing is required --> 3.6 minutes ON time & 5.1 hours OFF time

20 inches from bottom of tank to "pump ON" float, or 12 inches to "timer ON" float

23 inches from bottom of tank to "Hi Level Alarm" or 33 inches to "Hi level alarm" if time dosed

100 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 50.0 ft. long Rock bed

3 laterals 1.50 inch diameter 48.0 ft. long 3.0 ft. lateral spacing

7/32 inch perfs 3.0 ft. perforation spacing

No Effluent filter & alarm

3 clean out & valve box assemblies

36.5 ft.Total sand ABSORPTION width (minimum)

10.4 ft. upslope and sideslope (sand beyond rockbed, minimum)

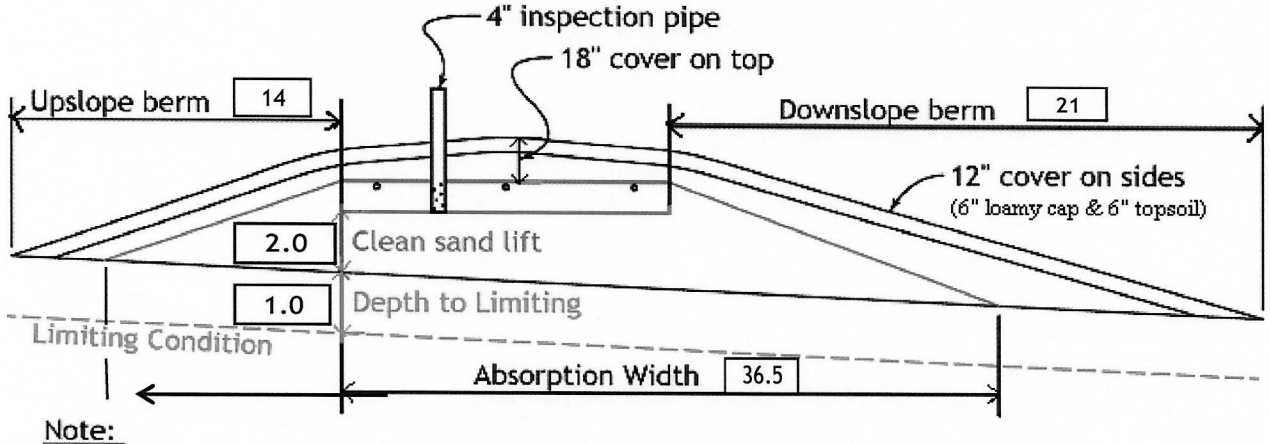
16.2 ft. Downslope (sand beyond rockbed, minimum)

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

4:1 upslope ratio 14 ft. upslope berm

4:1 sideslope 18 ft. sideslope berms

4:1 downslope 21 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:	23.0	yd^3 or *1.4=	32 ton	9 inches under pipe
Mound Sand:	219	yd^3 or *1.4=	306 ton	calculation based on 3:1/4:1 slope from top of rockbed
Loamy Cap:	75	yd^3 or *1.4=	105 ton	6" deep
Topsoil:	86	yd^3 or *1.4=	120 ton	6" deep

INSPECTOR CHECKLIST - mound

Near 22168 494th Ln McGregor

☐ 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 26 head VERIFY PUMP CURVE 3.6 min ON 5.1 hr OFF

☐ float setting drop 8.1 inches at ☐ 12.7 gpi "DESIGNED" 5.1 inches approx float tether length
103.0 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 50.0

☐ Sand lift depth 24 inches. (Jar test : 2" sand leaves < 1/8" silt after 30 min)

☐ Absorption Sand beyond rock 10.4 upslope 16.2 downslope

☐ Bermed topsoil beyond rockbed 14 upslope 18 sideslope 21 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

☐ 7/32 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

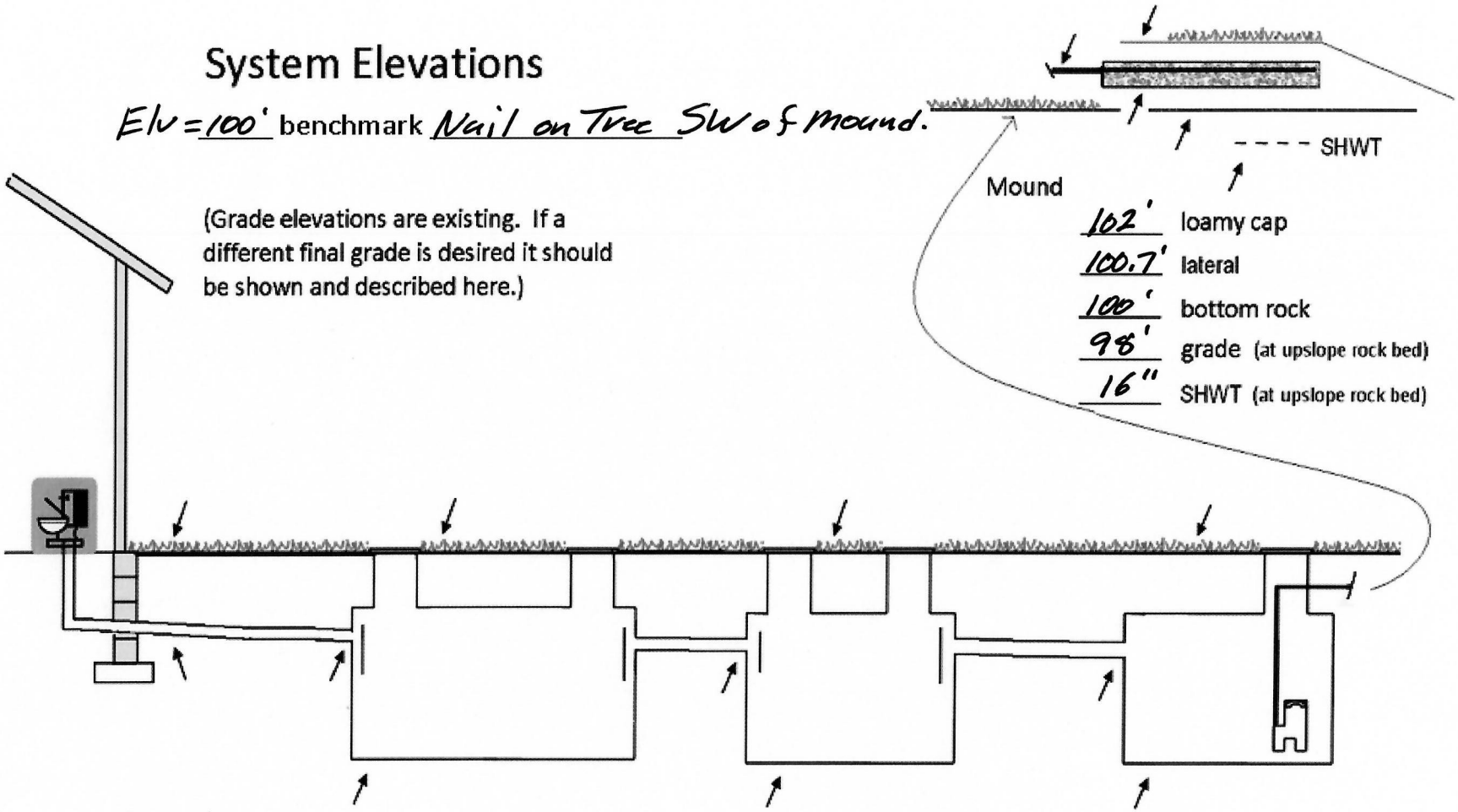
☐ Abandon existing system - if necessary ☐ Re-use existing tank certification

☐ monitoring plan and type _____

☐ well abandonment form - if necessary

System Elevations

Elv = 100' benchmark Nail on Tree SW of mound.



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

	Sewer pipe	Septic Tank	Septic Tank (if applicable)	Pump Tank
Proposed	~~exiting~~ house			
Estimated	94.2' Grade at wallout	93.4' Grade	_____ Grade	93.8' Grade
Estimated	92.7' Pipe	92' inlet approx.	_____ inlet	91.8' inlet
		88' Tank bottom	_____ Tank bottom	88' Tank bottom

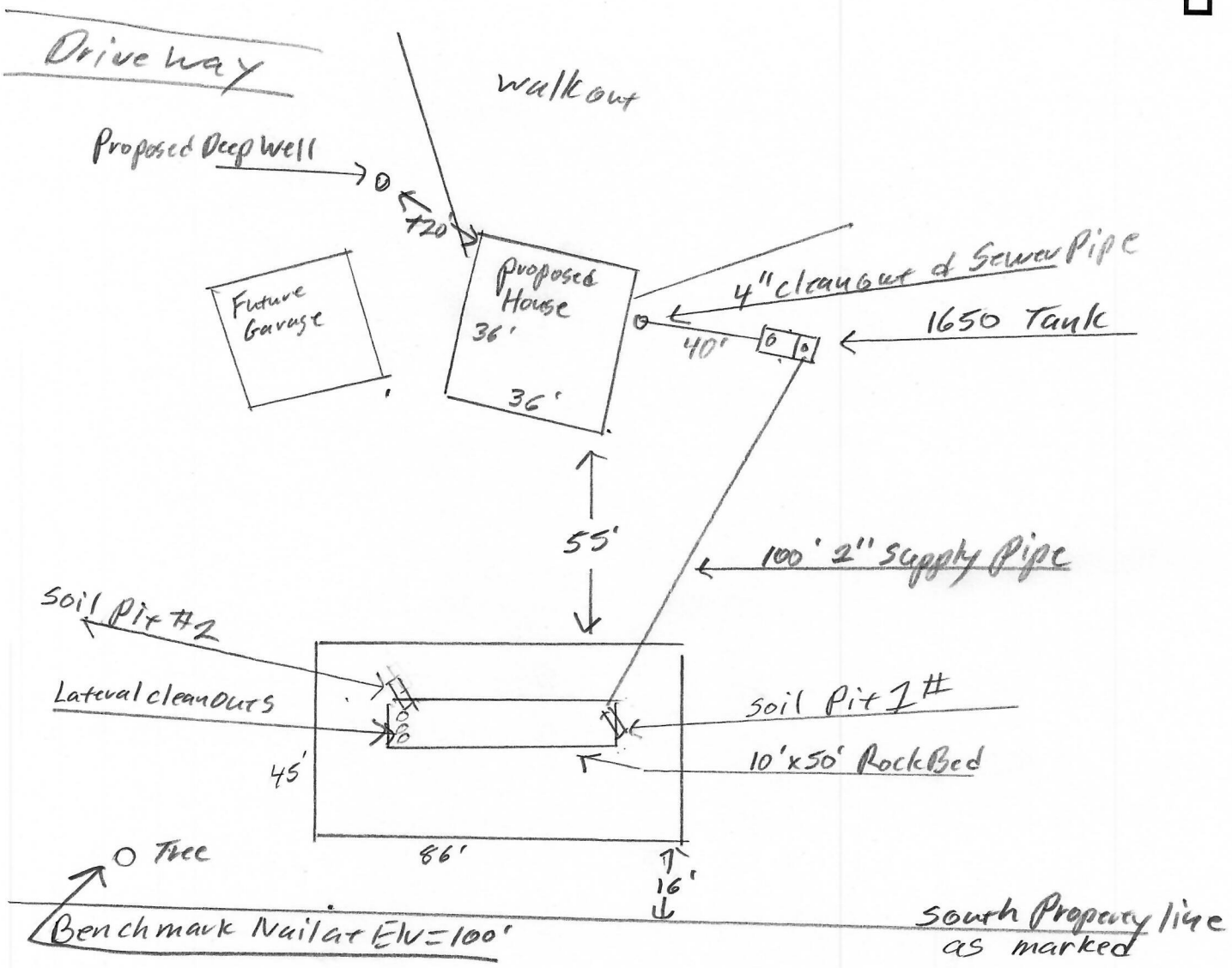
{ Design Drawing }

Property Owner: Timothy Nistler Date: 8/27/21 Designer's Initials : JB

Parcel ID. Number : 39-0-023906 Address : Near 22168 494th Ln McGregor

one Inch = 40ft.

North



Elevation of House not set ta time of design

Grade at SE corner of proposed house Elv. = 99.8 Estimated septic tank inlet Elv. = 92'

	Surface/ SHWT	***Nail on Tree = Bench Mark 100'***			Existing Grade
Soil Pit 1	98' / 16"	Bench Mark	100'		Upslope Edge of Rockbed Elv.= 98'
Soil Pit 2	98' / 18"	Ground Elv. BM	95.8'		Bottom of Rockbed Elv.= 100'
Soil Bore 3		Ground Elv. Tank	93.8'		Top of Washed Sand Elv.= 100'
	Ground at	Proposed house	94.2'	walkout	Estimated Sewer pipe at House Elv.= 92.7'

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: Timothy Nistler **Date:** 8/27/21

Site Address: Near 22168 494th Ln McGregor **PID:** 39-0-023906

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

1 This is a type I mound for a 4 bedroom House. Proposed deep well location will be NW of House.

2 Elevation of house not set at time of design. Half basement walk-out to the North of house.
Sewer will gravity flow from lower level to septic tank. No lift, no garbage disposal.

3 South property line is approx. 16 ft from south berm of mound.

4 Bench Mark Elevation 100' is a nail on a tree near SW corner of mound area.

5 Install Jacobson 1650 Compartment tank for gravity flow from lower level of house (Elv. not set)
Install clean-out near house. Insulate tank if less than 2 ft of cover soil.

6 Elevation contour of rock bed upslope edge is 98'.
The area size of the rock bed is 10' x 50' . Absorption area is 50' x 36.5'.
Sand absorption area is 10.4 ft. up slope + 10 ft. rockbed + 16.2 downslope = approx. 36.5 ft. wide sand base.
Berms are 14ft. Upslope, 21ft. Down slope, 10ft. Rock bed = approx. 45ft. Wide.
Overall mound size is approx. 45' wide x 86' long and approx. 4' high. End berms are 18 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. 103 gallons per dose, 8.1 inches of tank level. Install alarm at 3 inches from pump on level.

10 Install all manholes, inspection pipes and clean-outs to grade or above.
Recommend raising manholes 4" above finished grade for winter access.
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 7/32" holes for Perf sizing, 36" on centers.**

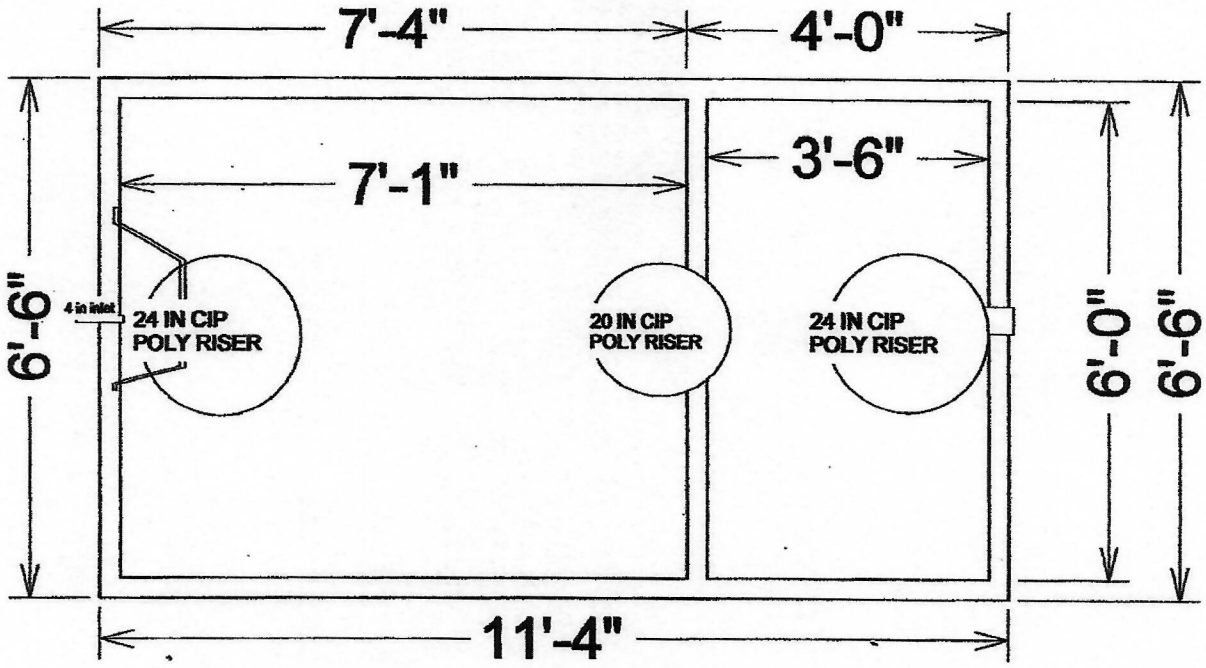
Install 4"inspection pipe to bottom of rock bed, secure in rock bed and raise to above final grade.

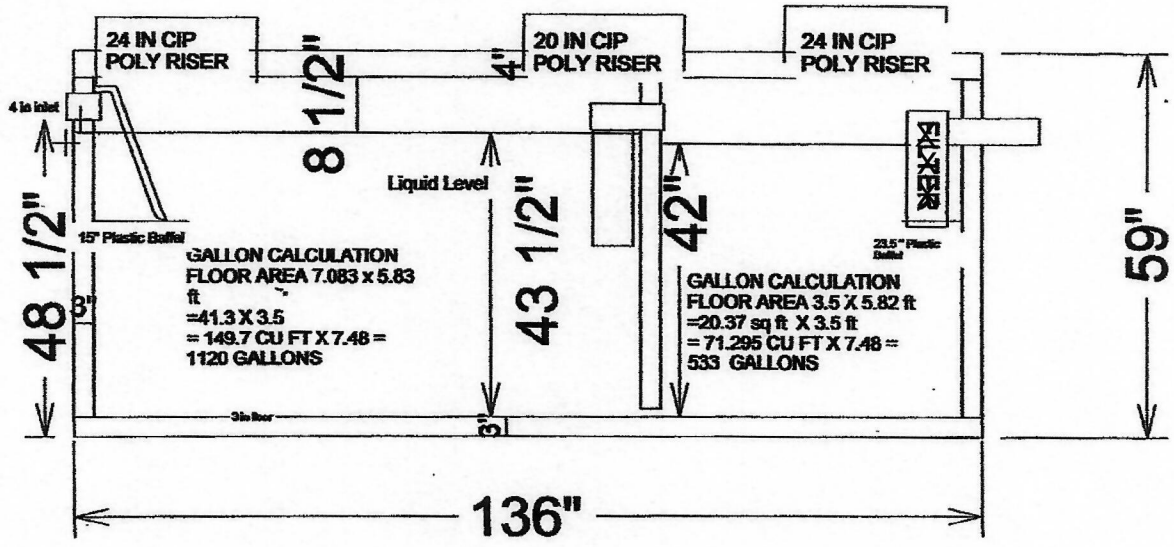
Designed to Aitkin Co. and MPCA recommendations and requirements.

Designer Signature | Brummer Septic LLC. (Design Company) | L-1347 (License#)

1650 Gallon 2 Compartment Septic Tank

TOP VIEW





SIDE VIEW

533 / 42" = 12.69 GPI

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

Aitkin County

Detailed Parcel Report

Parcel Number: 39-0-023906

General Information

Township/City:	WORKMAN TWP		
Taxpayer Name:	NISTLER, TIMOTHY A & JULIE M		
Taxpayer Address:	310 ALDER AVE APT A MCGREGOR MN 55760		
Property Address:			
Township:	49	**Lake Number:**	0
Range:	24	**Lake Name:**	
Section:	13	**Acres:**	10.00
Green Acres:	No	**School District:**	4.00
Plat:			
Brief Legal Description:	PT N1/2 N1/2 SE1/4 AS IN DOCS 344821 & 356756		

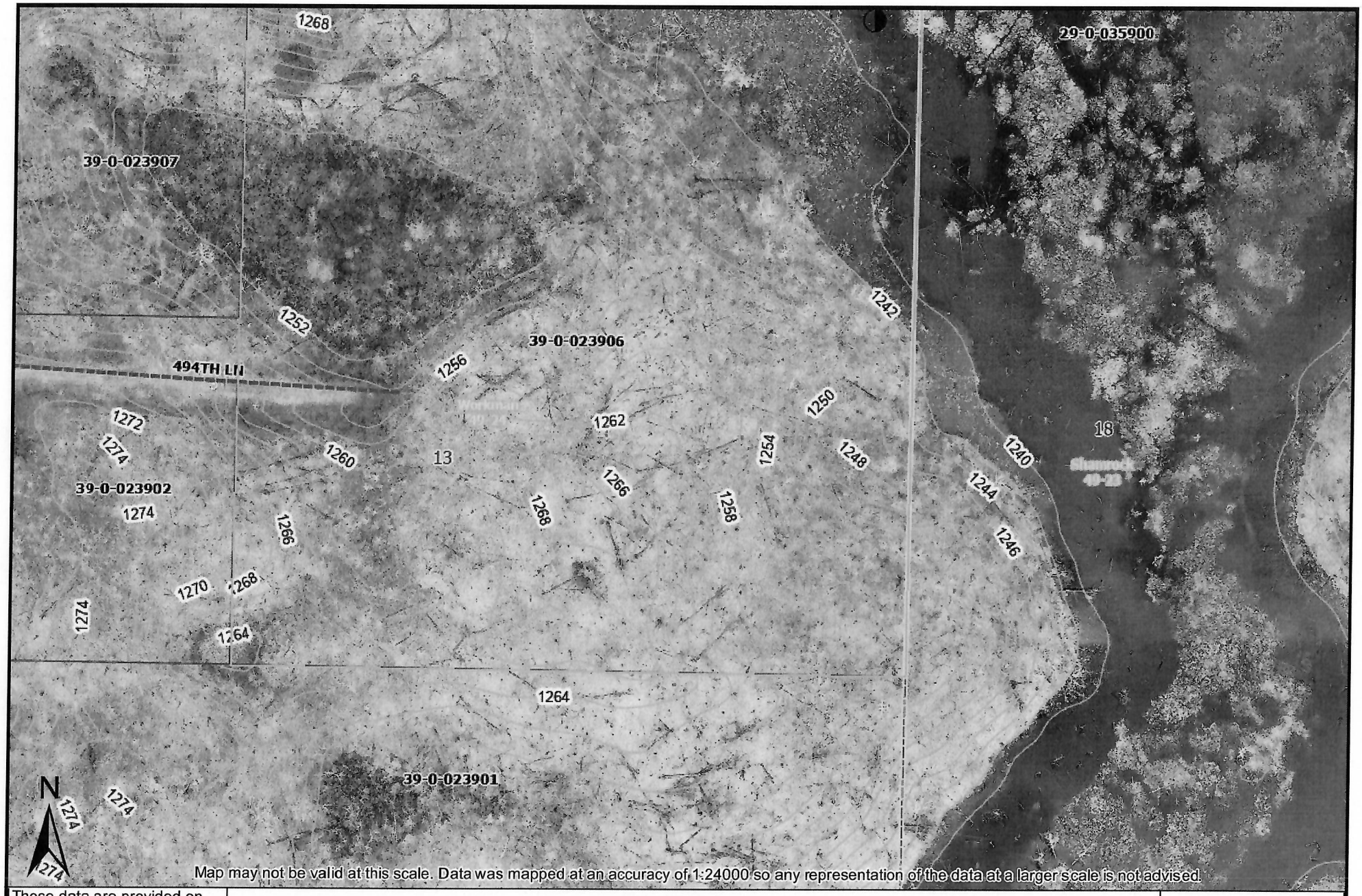
Tax Information

Class Code 1:	Rural Vacant Land
Class Code 2:	Unclassified
Class Code 3:	Unclassified
Homestead:	Non Homestead
Assessment Year:	2021

Estimated Land Value:	$26,100.00
Estimated Building Value:	$0.00
Estimated Total Value:	$26,100.00
Prior Year Total Taxable Value:	$26,900.00
Current Year Net Tax (Specials Not Included):	$186.00
Total Special Assessments:	$0.00
****Current Year Balance Not Including Penalty:**	$93.00
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 1:24000 so any representation of the data at a larger scale is not advised.

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.

Tim Nistler

1:2,217

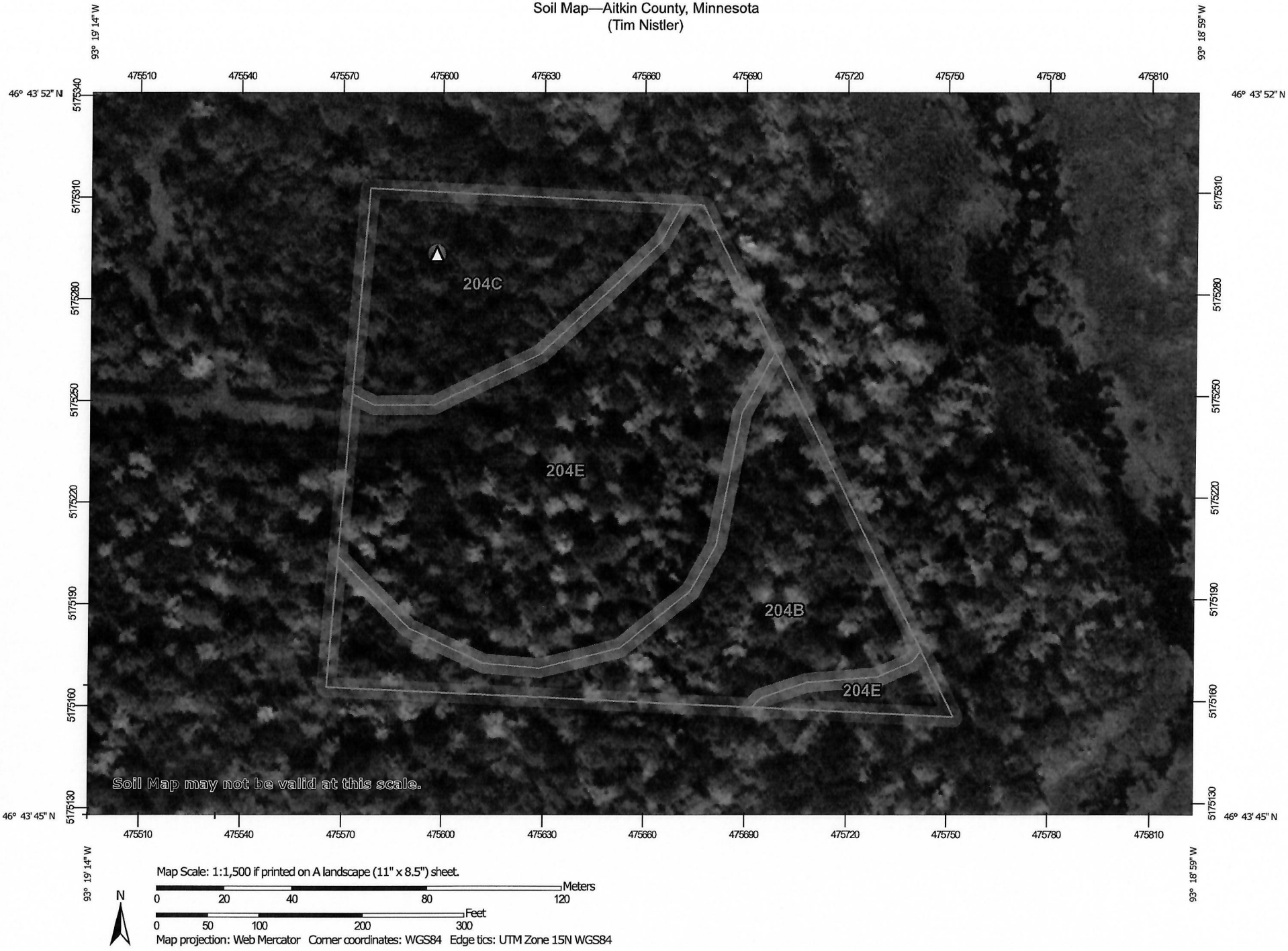
0 70 140 ft

1 inch = 185 feet

Aitkin County

Date: 8/16/2021

Soil Map—Aitkin County, Minnesota
(Tim Nistler)



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

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

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

Aitkin County, Minnesota

204B—Branstad loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: gjfx
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

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

Description of Branstad

Setting

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

Typical profile

A - 0 to 2 inches: loam
E,Bw,E',E/B - 2 to 17 inches: fine sandy loam
Bt1,Bt2 - 17 to 36 inches: loam
Bt3 - 36 to 43 inches: loam
C - 43 to 60 inches: loam

Properties and qualities

Slope: 2 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 high to high (0.20 to 2.00 in/hr)
Depth to water table: About 30 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Forage suitability group: Sloping Upland, Neutral (G090AN002MN)

Other vegetative classification: Sloping Upland, Neutral (G090AN002MN)
Hydric soil rating: No

Minor Components

Alstad 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

Cromwell and similar soils
Percent of map unit: 3 percent
Hydric soil rating: No

Hamre and similar soils
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Seelyeville and similar soils
Percent of map unit: 2 percent
Landform: Bogs
Hydric soil rating: Yes

Talmoon and similar soils
Percent of map unit: 2 percent
Landform: Swales
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Aitkin County, Minnesota
Survey Area Data: Version 21, Jun 4, 2020

Aitkin County, Minnesota

204C—Cushing loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: gjfy
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: Farmland of statewide importance

Map Unit Composition

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

Description of Cushing

Setting

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

Typical profile

E - 0 to 12 inches: loam
B/E - 12 to 25 inches: loam
Bt1,Bt2 - 25 to 44 inches: loam
C - 44 to 60 inches: loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Forage suitability group: Sloping Upland, Acid (G090AN006MN)
Other vegetative classification: Sloping Upland, Acid (G090AN006MN)

Hydric soil rating: No

Minor Components

Alstad and similar soils
Percent of map unit: 3 percent
Hydric soil rating: No

Cromwell 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

Talmoon and similar soils
Percent of map unit: 2 percent
Landform: Swales
Hydric soil rating: Yes

Hamre and similar soils
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Seelyeville and similar soils
Percent of map unit: 2 percent
Landform: Bogs
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Aitkin County, Minnesota
Survey Area Data: Version 21, Jun 4, 2020

Aitkin County, Minnesota

204E—Cushing loam, 12 to 25 percent slopes

Map Unit Setting

National map unit symbol: gjg0
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: Not prime farmland

Map Unit Composition

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

Description of Cushing

Setting

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

Typical profile

E - 0 to 5 inches: loam
B/E - 5 to 15 inches: loam
Bt1,Bt2 - 15 to 29 inches: loam
C - 29 to 60 inches: loam

Properties and qualities

Slope: 12 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Forage suitability group: Steep; Fine Texture (G090AN017MN)
Other vegetative classification: Steep; Fine Texture (G090AN017MN)

Hydric soil rating: No

Minor Components

Cromwell and similar soils
Percent of map unit: 4 percent
Hydric soil rating: No

Cutaway and similar soils
Percent of map unit: 4 percent
Hydric soil rating: No

Alstad and similar soils
Percent of map unit: 4 percent
Hydric soil rating: No

Seelyeville and similar soils
Percent of map unit: 3 percent
Landform: Bogs
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Aitkin County, Minnesota
Survey Area Data: Version 21, Jun 4, 2020