Preliminary & Field Evaluation Form

www.SepticResource.com vers 12.4

Owner Information

Date	10/10/2020	Sec / Twp / Rng	S-8, T-49, R-23
Parcel ID	29-1-503701	LUG (county, city, township)	Aitkin Co.
Property Owner:	Karen Hick	Owners address (if different)	
Property Address:	49836 204th PL McGregor MN 55760		4200 Dupont Ave. So.
City / State / Zip:	612-889-9345		Minneapolis MN 55409

Flow Information and Waste Type / Strength

Estimated Design flow: 600

Comments:

Install Infiltrator Quick plus 4 chambers
Infiltrator Quick4 Plus High Capacity

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	Existing Shallow well in garage	
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	☐ 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: Steep slope

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) 0.78

Percolation rate (if applicable) _____

Depth/elev to SHWT 72"

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

Depth to system bottom maximum (or elev minimum) 36"

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) _____

Soil Survey information determined (see attachment) ☑ Yes ☐ 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: Karen Hick Date 10/10/2020

Property Address / PID: 49836 204th PL McGregor MN 5576

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: 454E slope 10 % direction- NW & N

Soil Boring #1

☑ Boring ☐ Pit Elevation 97' Depth to SHWT 84'

Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 6	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular
6 - 27	Sandy Loam	<35	10YR5/4		Loose	Loose	Granular
27- 60	Med Sand	<35	10YR4/6		Loose	Loose	Granular
60 - 74	Med Sand	<35	7.5YR5/6		Loose	Loose	Granular
74 - 84	Med Sand	<35	10YR6/4		Loose	Loose	Granular

Comments: Because of the 7.5YR color in some of the sand I choses to dig pits near soil Borings

49836 204th PL McGregor MN 55760			**Soil Pit #1**				
☐ Boring ☑ Pit			Elevation 97'		Depth to SHWT 72		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 6	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular
6 - 24	Sandy Loam	<35	10YR5/4		Loose	Loose	Granular
24 - 52	Med Sand	<35	10YR4/6		Loose	Loose	Granular
52 - 72	Med Sand	<35	10YR5/4		Loose	Loose	Granular
55 - 66	Undulating Layer of 7.5YR5/6	<35	Sand layer 3 to 6 inches thick in pit		Loose	Loose	Granular

49836 204th PL McGregor MN 55760			**Soil boring #2**				
☑ Boring ☐ Pit			Elevation 92'		Depth to SHWT	48" hit a rock	
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 6	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular
6 - 22	Sandy Loam	<35	10YR5/4		Loose	Loose	Granular
22 - 42	Med Sand	<35	7.5YR5/6		Loose	Loose	Granular
42 - 48	Med Sand	<35	10YR5/4	48" hit a Rock	Loose	Loose	Granular
		<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 #

49836 204th PL McGregor MN 55760			**Soil Pit #2**				
		☐ Boring ☑ Pit	Elevation 92'		Depth to SHWT 72"		
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 6	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular
6 - 24	Sandy Loam	<35	10YR5/4		Loose	Loose	Granular
24 - 41	Med Sand	<35	7.5YR4/6		Loose	Loose	Granular
41-72	Med Sand	<35	10YR5/4		Loose	Loose	Granular
		<35					

49836 204th PL McGregor MN 55760			**Soil Log #5**				
		☐ 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.

[signature]
Designer Signature

Brummer Septic LLC.
Company

L-1347
License #

Aitkin
XXXXXX **Cass County Trench/Seepage Bed Design**

Property Owner: Karen Hick Date: 10/11/2020

Mailing Address: 4200 Dupont Ave. S

City: Minneapolis State: MN Zip: 55409

Home Phone Number: Cell: 612-889-9345

Site Address: 49836 204th Pl

City: McGregor State: MN Zip: 55760

Driving directions if no address issued:

Legal Description: 29-1-503701 & 29-1-513100

Sec: 8 Twp: 49 Range: 23 Twp Name: Shamrock

Parcel Number: 29-1-503701

Lake/ River: Big Sandy Lake/River Classification: GD

Flow Data

Number of Bedrooms: 4

Dwelling Classification: I

System Type: I

GPD: 600

Estimated Flow in Gallons per Day (GPD)			
Bedrooms	Class I	Class II	Class III
2	300	225	180
3	450	300	218
4	600	375	256
5	750	450	294
6	900	525	332
7	1050	600	370
8	1200	675	408

Wells

Deep Well: None

Shallow Well: Existing Shallow

Wells to be sealed (if applicable)?

Setbacks

Tank(s) to: Well +50' House 58' Property Line +20'

Drainfield to: Well +120' House +120' Property Line +60'

Sewer Line to well: +50'

Air Test: No

Additional System Notes and Information:

Shallow Well in garage, existing system to be abandon.

Designer Name: Jeff Brummer License Number: L-1347

Address: 7450 Burr Ln.

City: Brainerd State: MN Zip: 56401

Home Phone Number: Cell: (218) 821-0704

E-Mail Address: brummerseptic@gmail.com

Designer Signature: Date: 10/11/2020

Cass County Trench/Seepage Bed Design

Parcel Number: 29-1-503701 Property Owner: Karen Hick Date: 10/11/2020

Tank Sizing

Install 1820 Jacobson 2/Compartment tank

Designer's Initials: JB

A. Septic Tank Capacity: 1000 Gallons

Tank Type: 1 Compartments Filter: No

Garbage Disposal/Basement Lift Station: No Disposal or Lift

B. Pump Tank Capacity: 500 Gallons (7080.2100)

a. Alarm Type: Electric

Septic Tank Capacity		
Bedrooms	Minimum	GD/BL
4 or less	1,000	1,500
6 or 7	2,000	3,000

Absorption Width Ratio Table		
Texture	SSF	AWR
Sand	0.83	1.00
Fine Sand	1.67	2.00
Sandy Loam	1.27	1.52
Loam	1.67	2.00
Silt Loam	2.00	2.40
Clay Loam	2.20	2.67

Soils

C. Depth to Restricting Layer: 7 ft.

D. Native SSF: 1.27 Aitkin Co. Min of 1.27 sizing

(Perc. Rate [Optional] _____MPI)

****Enter GPD next to the type of system****

Rock Trenches

E. 6 in. Trench Depth _____ GPD × D = 0.0 sq. ft. Cubic Yards of Rock: 0.0 yds³

F. 12 in. Trench Depth _____ GPD × D × .8 = 0.0 sq. ft. Cubic Yards of Rock: 0.0 yds³

G. 18 in. Trench Depth _____ GPD × D × .66 = 0.0 sq. ft. Cubic Yards of Rock: 0.0 yds³

H. 24 in. Trench Depth _____ GPD × D × .6 = 0.0 sq. ft. Cubic Yards of Rock: 0.0 yds³

I. Divide (E-H) by Trench Width for lineal feet: 0.0 ÷ 3 = 0.0

Chamber Trenches

J. Brand: Infiltrator Quick 4 Plus High Capacity Dimensions of one chamber (L x W): 4.0 ft. × 2.8 ft.

K. 6-11 in. Chamber Depth _____ GPD × D = 0.0 sq. ft.

L. 12 in. Chamber Depth 600 GPD × D × .8 = 609.6 sq. ft.

M. Select from (K-L) if installing Chamber Trenches: 609.6

N. Divide (M) by Trench Width for lineal feet: 609.6 ÷ 3.0 = 203.2 Lineal Feet

O. Total Chambers Needed (**Round Up**): 50.8 Chambers Install 53 chambers

Seepage Beds

P. Seepage Bed _____ GPD × D × 1.5 = 0.0 sq. ft.

a. Bed Dimensions 1.0 ft. × 0.0 ft.

b. Cubic Yards of Rock Bed Length × Bed Width × Rock Depth 1 ft. ÷ 27 = 0.0 yds³

Additional System Notes and Information:

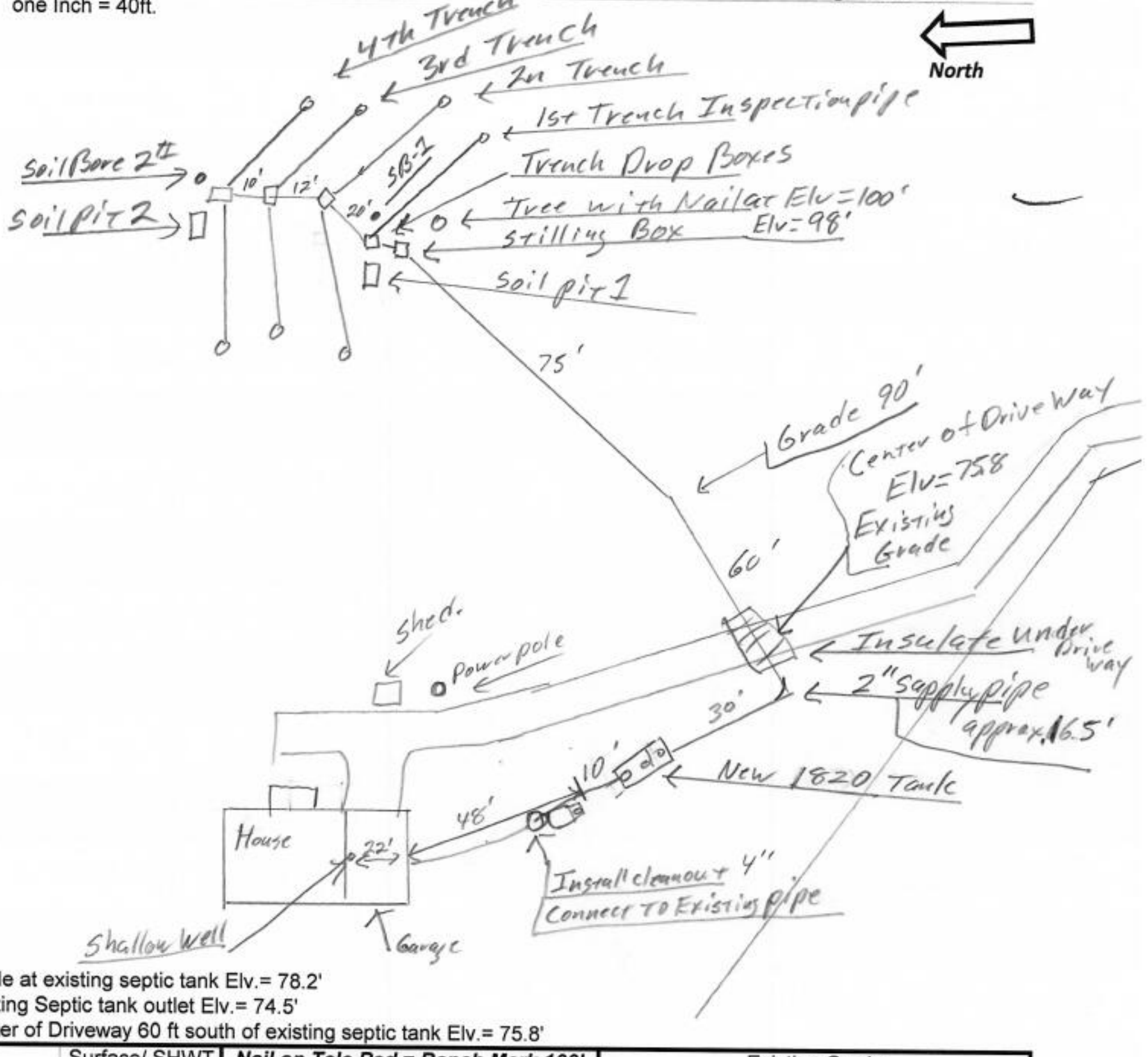
Shallow Well in garage, existing system to be abandon.

{ Design Drawing }

Property Owner: Karen Hick Date: 10/10/20 Designer's Initials : JB

Parcel ID. Number : 29-1-503701 Address : 49836 204th PL McGregor MN 55760

one Inch = 40ft.



Grade at existing septic tank Elv.= 78.2'

Existing Septic tank outlet Elv.= 74.5'

Center of Driveway 60 ft south of existing septic tank Elv.= 75.8'

	Surface/ SHWT	***Nail on Tele Ped = Bench Mark 100'***		
Soil Bore 1	97'/84 "	Bench Mark	100'	
Soil Pit 1	97'/72"	Ground Elv. BM	99.4'	
Soil Bore 2	92' /	Ground Elv. Tank	78.2'	
Soil Pit 2	92'/72"	Garage floor	76.1'	

Existing Grade
Grade at 1st trench drop box Elv.= 97'
Grade at 2nd trench drop box Elv.= 95.5'
Grade at 3rd trench drop box Elv.= 93.5'
Grade at 4th trench drop box Elv.= 92.2'

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:

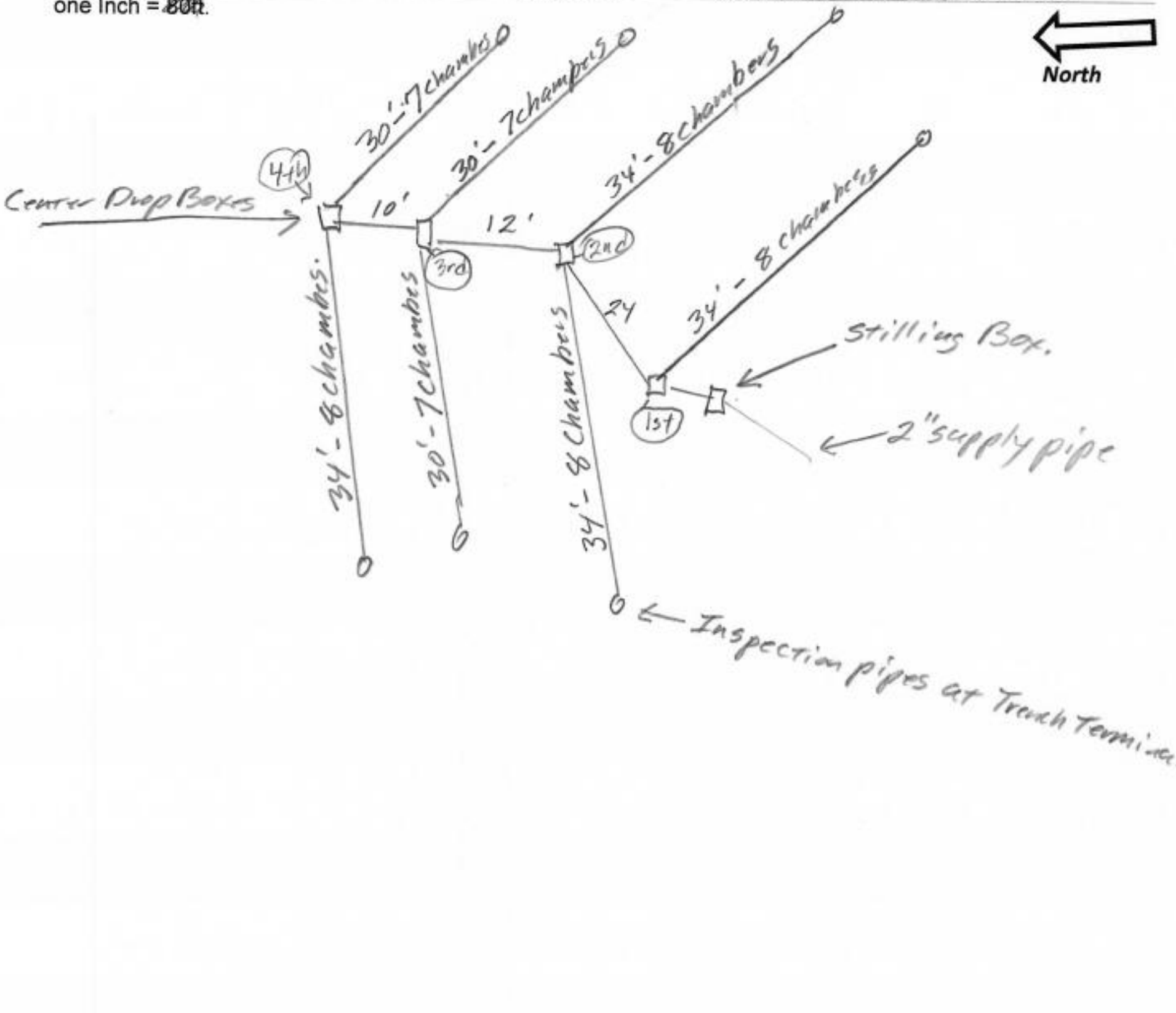
Disturbed/Compacted Areas	Access Route for Tank Maintenance
Component Location	Property Lines
OHW ordinary high water	Structures
Lot Easements	Setbacks

{ Design Drawing }

Property Owner: Karen Hick Date: 10/10/20 Designer's Initials : JB

Parcel ID. Number : 29-1-503701 Address : 49836 204th PL McGregor MN 55760

one Inch = ~~80ft~~.



Grade at existing septic tank Elv.= 78.2'

Existing Septic tank outlet Elv.= 74.5'

Center of Driveway 60 ft south of existing septic tank Elv.= 75.8'

	Surface/ SHWT	***Nail on Tele Ped = Bench Mark 100'***		Existing Grade
Soil Bore 1	97'/84 "	Bench Mark	100'	Grade at 1st trench drop box Elv.= 97'
Soil Pit 1	97'/72"	Ground Elv. BM	99.4'	Grade at 2nd trench drop box Elv.= 95.5'
Soil Bore 2	92' /	Ground Elv. Tank	78.2'	Grade at 3rd trench drop box Elv.= 93.5'
Soil Pit 2	92'/72"	Garage floor	76.1'	Grade at 4th trench drop box Elv.= 92.2'

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: Karen Hick **Date:** 10/10/20

Site Address: 49836 204th PL McGregor MN 55760 **PID:** 29-1-503701

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

1 This is a type I Septic System Sized as a 4 bedroom. Shallow well inside garage 22 ft from south wall

2 Talked with Becky about slopes, on 9/17/2020, concluded that area was steep slopes, not a bluff.

3 Existing tank to be pumped, collapsed, filled or removed. Existing gravity bed to be abandon.
Installer to connect to existing sewer pipe if possible, install clean-out at connection.

4 Bench Mark Elevation = 100' is a nail on a tree near SE corner of 1st drop box.

5 Install Jacobson 1820 Compartment tank for gravity flow from house. Existing tank outlet Elv.= 74.5'
Install new tank with approx. inlet Elv. = 73.5' Install tank low enough for drain back from stilling box.
Insulate 2" supply pipe where it crosses driveway.
Mark 2" supply pipe on both sides of driveway for future location by utility companies. (recommended)
2" supply pipe will be approx. 165 ft., Dump into a stilling box, (extra drop box to dissipate effluent velocity).
Install center drop boxes with serial distribution down the slope. Install trenches on contour.
Install Infiltrator Quick4 Plus High Capacity chambers. Each chamber is 48" long. 53 total chambers.

6 Approx. Elevation contour of 1st trench is 97'. 8 chambers west of Drop box
Approx. Elevation contour of 2nd trench is 95.5'. 8 chambers west of Drop box, 8 chambers East of Drop box.
Approx. Elevation contour of 3rd trench is 93.5'. 7 chambers west of Drop box, 7 chambers East of Drop box.
Approx. Elevation contour of 4th trench is 92.2'. 8 chambers west of Drop box, 7 chambers East of Drop box.
Max trench depth is 3 ft to bottom of trench finished grade, keep trenches approx. 18" to 20" deep average depth.

7 Bench Mark Elevation = 100' is a nail on a tree near SE corner of 1st drop box.
Installer to double check bench mark. Installer should confirm bench mark and trench Elv. with inspector.
Installer should record bench mark Elv. and trench Elv. on installation inspection form.

8 Install 4" inspection pipes at all trench terminal ends, (recommend inspection pipe in drop boxes also.)
It is important that the soils do not get compacted.

9 The Jacobson 1820 compartment tank will be gravity flow from dwelling. Install the pump for 8 demand doses per day. approx. 103 gallons per dose, 6.5 inches of tank level. Install Electric alarm at 3 inches from pump on level.
Install all manholes, inspection pipes and clean-outs to grade or above, insulate top of tank.

10 Install pump with 15 to 20 GPM at 30 ft of head. Do not oversize pump.
Install a 2" supply pipe from tank to stilling box, install so pipe drains back to tank.

11 Installer will check that pump is lifting to stilling box when finished.

Designed to Aitkin Co. and MPCA recommendations and requirements.

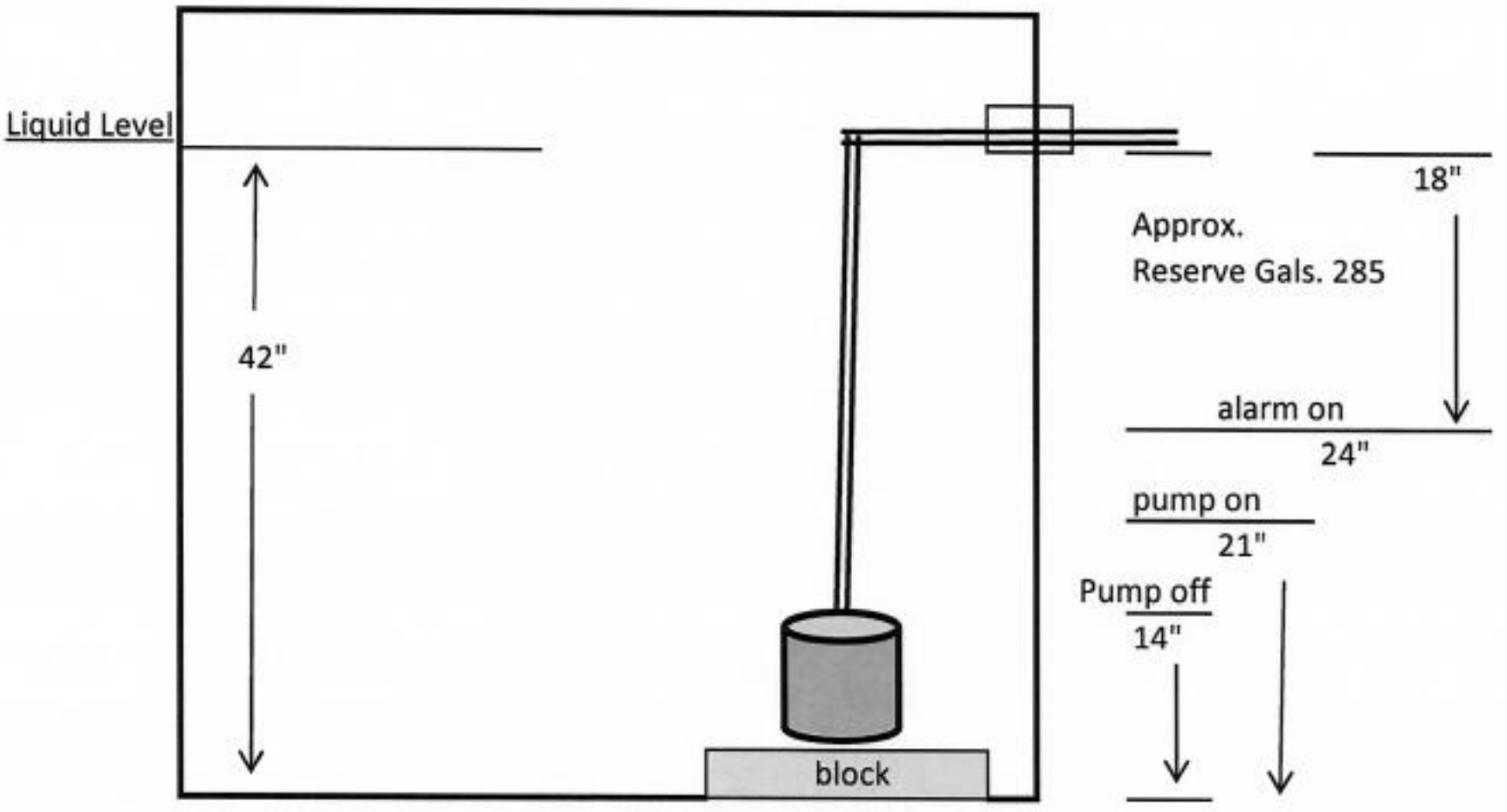
Designer Signature | Brummer Septic LLC. Design Company | L-1347 License#

Pump settings for 666 gal Jacobson Pump tank.

Karen Hick

Parcel ID. 29-1-503701

Tank Mfg. Jacobson 1820 2/Compartment Tank 11152 / 666
Tank Size: MFG. 15.82 gals. Per inch



Assumes 10" pump
Pump out dose at 6.5" = (75 gals. dose + 28 drain back) = 103 pump out gals.
600 gpd ÷ 8 = 75 gals. Per Dose

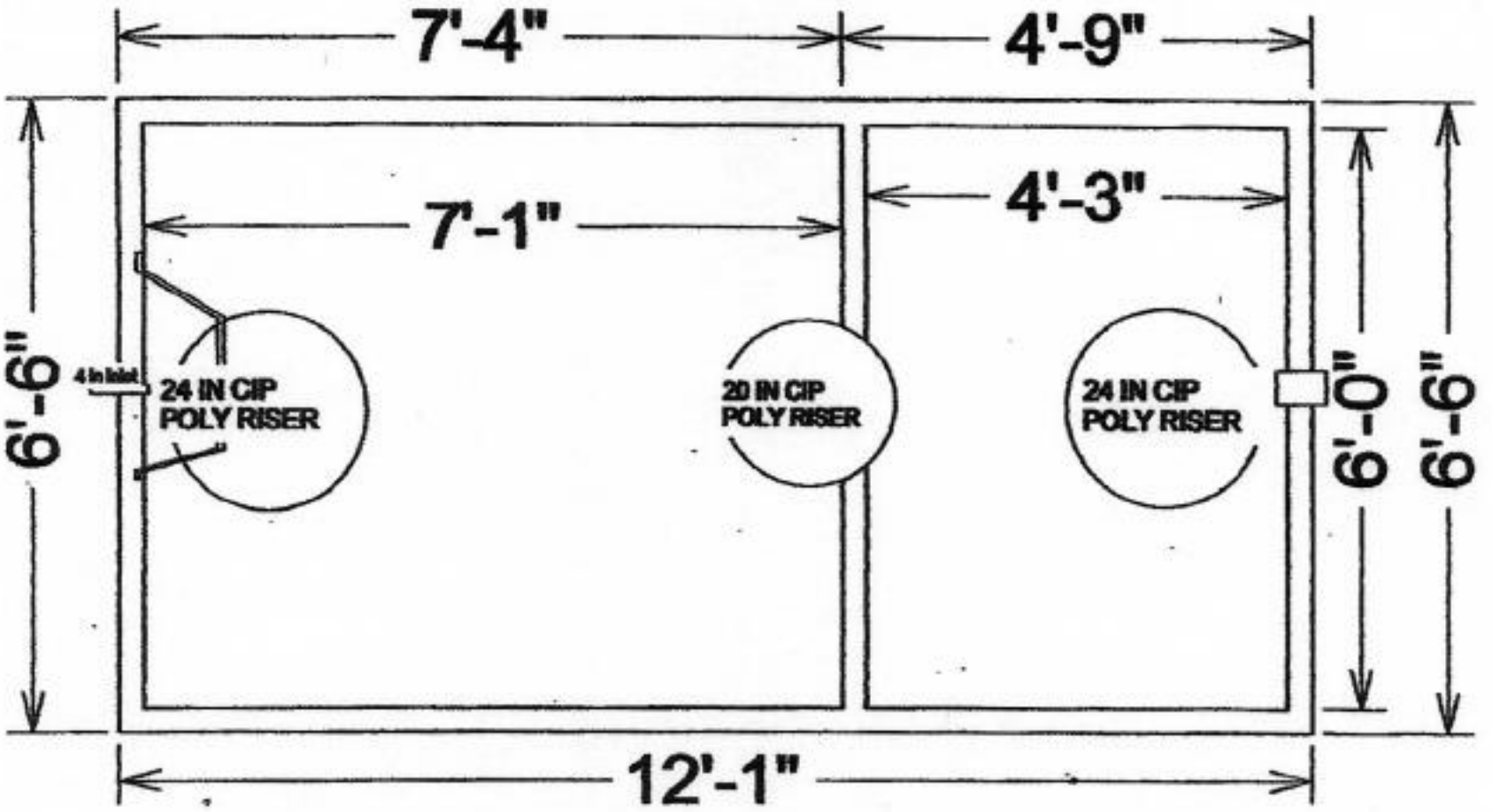
2" pipe has .17 gallons per foot
165 ft x .17 = 28.05 gallons of drainback

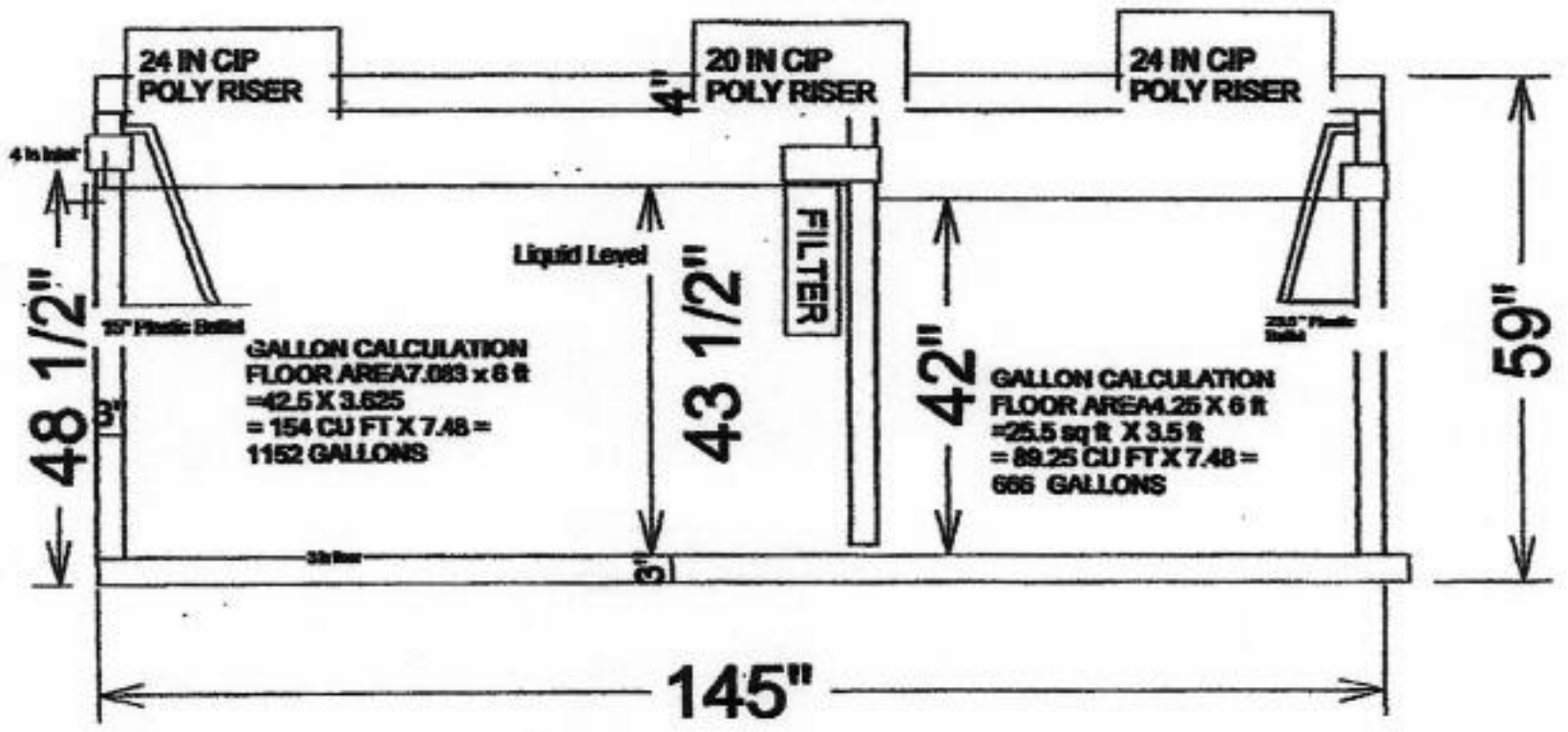
Pump Requirements 15 to 20 Gpm at 30 ft of head
Total Elevation from pump (Elv= 71') to stilling box (Elv.= 98') = 27 ft.

1820 Gallon 2 Compartment Septic Tank

Weight: 13, 780 Lbs

TOP VIEW





666 gal. / 42" = 15.85 GPI

SIDE VIEW

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

INFILTRATOR
water technologies

Quick4 PLUS
CHAMBER SYSTEMS

The **Quick4® Plus** **High Capacity** Chamber

Quick4 Plus™ Series

The Quick4 Plus High Capacity Chamber offers maximum strength through its two center structural columns. This chamber can be installed in a 36-inch-wide trench. Like the original line of Quick4 chambers, it offers advanced contouring capability with its Contour Swivel Connection™ which permits turns up to 15-degrees, right or left. It is also available in four-foot lengths to provide optimal installation flexibility. The Quick4 Plus All-in-One 12 Endcap, and the Quick4 Periscope are available with this chamber, providing increased flexibility in system configurations.

Maximum Strength

Quick4 Plus High Capacity Chamber Benefits:

- Two center structural columns offer increased stability and superior strength
- Advanced contouring connections
- Latching mechanism allows for quick installation
- Four-foot chamber lengths are easy to handle and install
- Supports wheel loads of 16,000 lbs/axle with 12" of cover

Quick4 Plus High Capacity Chamber Specifications

Size 34"W x 53"L x 14"H (864 mm x 1346 mm x 356 mm)
Effective Length 48" (1219 mm)
Louver Height 12" (305 mm)
Storage Capacity 54 gal (204 L)
Invert Height 0.8" (20 mm), 5.3" (135 mm), 8.0" (203 mm), 12.7" (323 mm)

Quick4 Plus All-in-One 12 Endcap Benefits:

- May be used at the end of chamber row for an inlet/outlet or can be installed mid-trench
- Mid-trench connection feature allows construction of chamber rows with center feed, as an alternative to inletting at the ends of chamber rows
- Center-feed connection allows for easy installation of serial distribution systems
- Pipe connection options include sides, ends or top

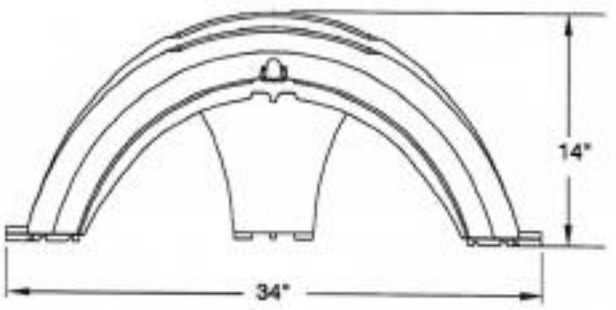
Quick4 Plus All-in-One Periscope Benefits:

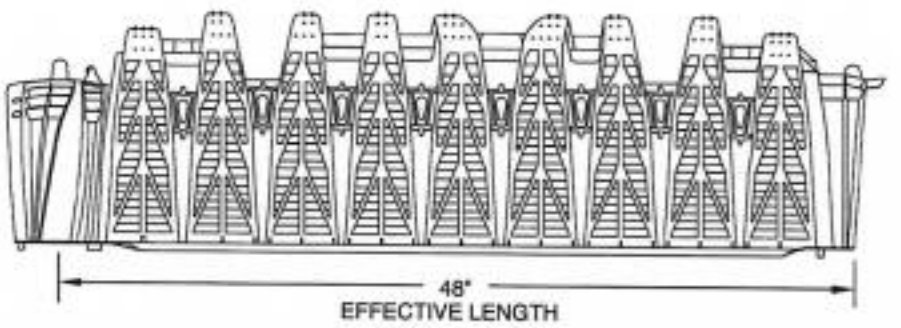
- Allows for raised invert installations
- 180° directional inletting
- 12" raised invert is ideal for serial applications

Certified by the International Association of Plumbing and Mechanical Officials (IAPMO)

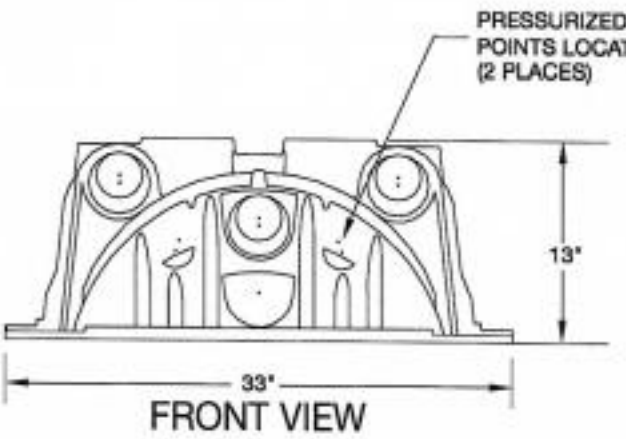
APPROVED in _____

Quick4 Plus High Capacity Chamber

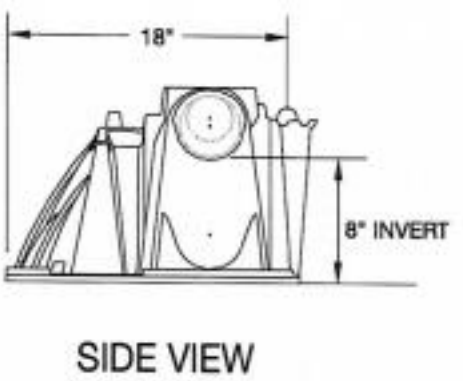




Quick4 Plus All-in-One 12 Endcap

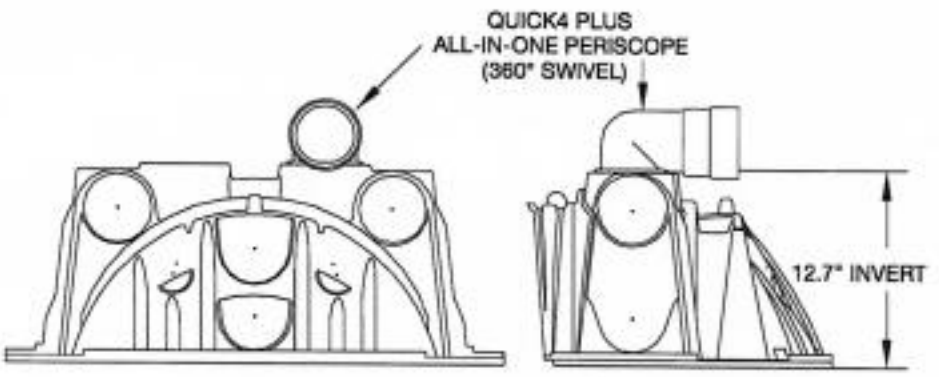


FRONT VIEW



SIDE VIEW

Quick4 Plus All-in-One Periscope



INFILTRATOR WATER TECHNOLOGIES STANDARD LIMITED WARRANTY

(a) The structural integrity of each chamber, endcap and other accessory manufactured by Infiltrator ("Units"), when installed and operated in a leachfield of an onsite septic system in accordance with Infiltrator's instructions, is warranted to the original purchaser ("Holder") against defective materials and workmanship for one year from the date that the septic permit is issued for the septic system containing the Units; provided, however, that if a septic permit is not required by applicable law, the warranty period will begin upon the date that installation of the septic system commences. To exercise its warranty rights, Holder must notify Infiltrator in writing at its Corporate Headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect. Infiltrator will supply replacement Units for Units determined by Infiltrator to be covered by this Limited Warranty. Infiltrator's liability specifically excludes the cost of removal and/or installation of the Units.

(b) THE LIMITED WARRANTY AND REMEDIES IN SUBPARAGRAPH (a) ARE EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE UNITS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE

(c) This Limited Warranty shall be void if any part of the chamber system is manufactured by anyone other than Infiltrator. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Infiltrator shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units; the Units being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground covers set forth in the installation instructions; the placement of improper materials into the system containing the Units; failure of the Units or the septic system due to improper siting or improper sizing, excessive water usage, improper grease disposal, or improper operation; or any other event not caused by Infiltrator. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty. Further, in no event shall Infiltrator be responsible for any loss or damage to the Holder, the Units, or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Infiltrator's installation instructions.

(d) No representative of Infiltrator has the authority to change or extend this Limited Warranty. No warranty applies to any party other than the original Holder.

The above represents the Standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of Units should contact Infiltrator's Corporate Headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units.

INFILTRATOR®
water technologies

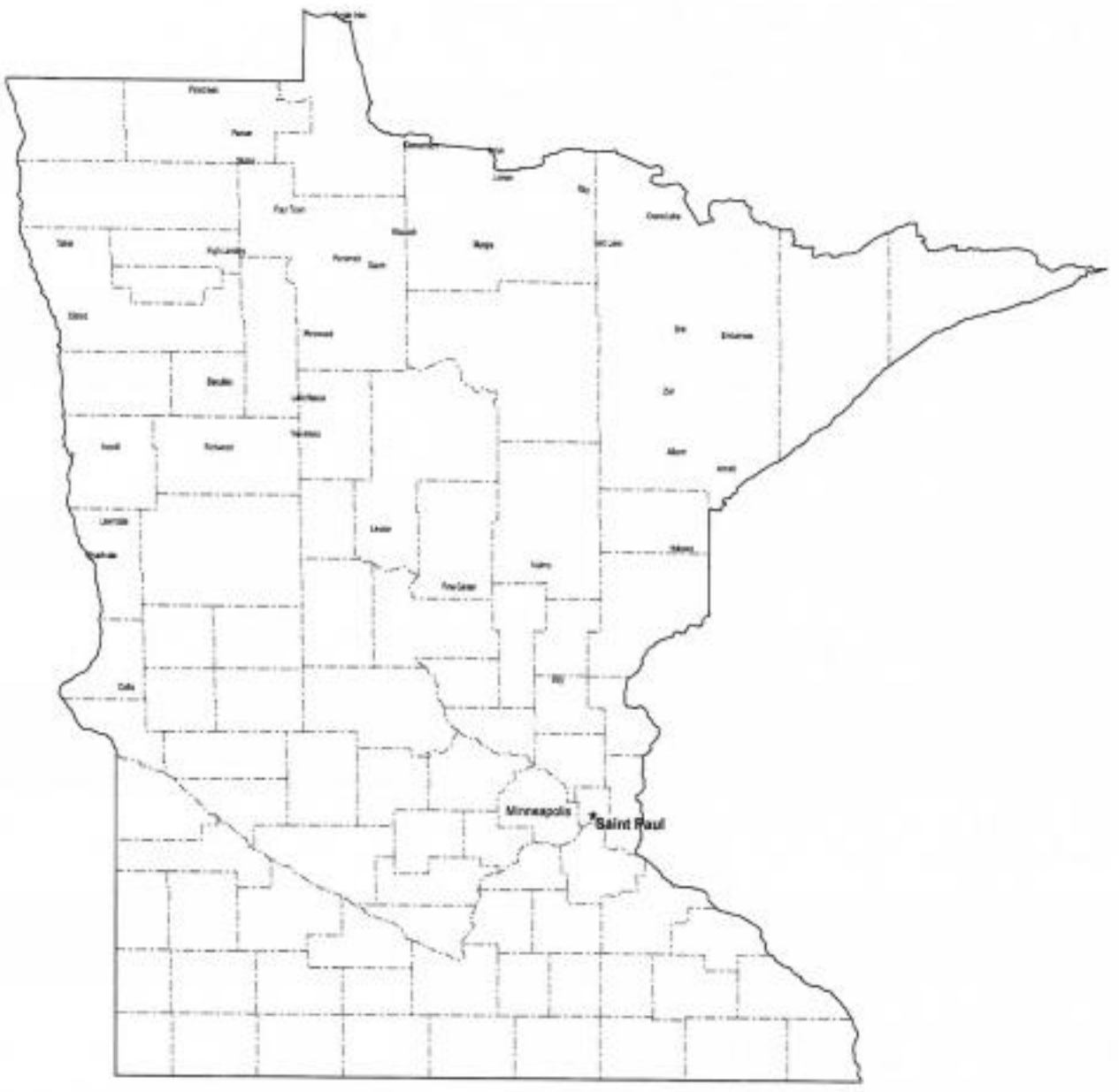
4 Business Park Road
P.O. Box 768
Old Saybrook, CT 06475
860-577-7000 • Fax 860-577-7001
1-800-221-4436
www.infiltratorwater.com

PLUS10 0713

Contact Infiltrator Water Technologies' Technical Services Department for assistance at 1-800-221-4436

INFILTRATOR
water technologies

Design and Installation Manual for Quick4 and Quick4 Plus Chambers in Minnesota



Minnesota

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The purpose of this product information sheet is to provide specific design and installation information pertinent for the use of Infiltrator products in Minnesota.

For more detailed design information, please contact Infiltrator Water Technologies at 1-800-221-4436

Minnesota

Chamber Ratings

For trench applications, the following shall be the basis for establishing equivalency for nominal chamber width to stone and pipe trench width.

- 16-inch-wide chamber is equivalent to an 18-inch-wide stone and pipe trench
- 22-inch-wide chamber is equivalent to a 24-inch-wide stone and pipe trench
- 34-inch-wide chamber is equivalent to a 36-inch-wide stone and pipe trench

NOTE: The 34-inch-wide Quick4 High Capacity chamber is eligible for a bottom area reduction under Section 7080.2210, Subpart 3(B).

TABLE 1: TRENCH SIZING FOR CLASSIFICATION I DWELLINGS[1] AND EFFLUENT TREATMENT LEVEL C QUICK4 STANDARD, QUICK4 PLUS STANDARD, AND QUICK4 PLUS STANDARD LOW PROFILE (LP) CHAMBERS

Soil Loading Rate (gpd/sf)[2]	Number of Bedrooms							
	2		3		4		5	
	Number of Chambers	Linear Feet	Number of Chambers	Linear Feet	Number of Chambers	Linear Feet	Number of Chambers	Linear Feet
1.20	21	84	32	128	42	168	52	208
0.78	32	128	48	192	65	260	81	324
0.60	42	168	63	252	84	336	105	420
0.50	50	200	75	300	100	400	125	500
0.45	56	224	84	336	112	448	139	556
0.24	105	420	157	628	209	836	261	1044

NOTES:

1. Sizing for Classification II and III dwellings shall use design flows in Table IV of Section 7080.1850.
2. Soil loading rates and corresponding soil texture groups are based on Table IX and IXa of Section 7080.2150.
3. Rapidly permeable soil textures require conformance with Section 7080.2260, including, but not limited to pressure distribution of effluent.

TABLE 2: TRENCH SIZING FOR CLASSIFICATION I DWELLINGS1 AND EFFLUENT TREATMENT LEVEL C QUICK4 PLUS HIGH CAPACITY AND QUICK4 HIGH CAPACITY CHAMBERS AT A 20% BOTTOM REDUCTION[2]

Soil Loading Rate (gpd/sf)[3]	Number of Bedrooms							
	2		3		4		5	
	Number of Chambers	Linear Feet	Number of Chambers	Linear Feet	Number of Chambers	Linear Feet	Number of Chambers	Linear Feet
1.20	19[5]	76	25	100	34	136	42	168
0.78	26	104	39	156	52	208	65	260
0.60	34	136	50	200	67	268	84	336
0.50	40	160	60	240	80	320	100	400
0.45	45	180	67	268	89	356	112	448
0.24	84	336	125	500	167	668	209	836

NOTES:

1. Sizing for Classification II and III dwellings shall use design flows in Table IV of Section 7080.1850.
2. As allowed under Section 7080.2210, Subpart 3(B), a bottom area reduction of 20% has been included in the trench sizing calculation.
3. Soil loading rates and corresponding soil texture groups are based on Table IX and IXa of Section 7080.2150.
4. Rapidly permeable soil textures require conformance with Section 7080.2260, including, but not limited to pressure distribution of effluent.
5. Minimum trench length or number of chambers required by Infiltrator.
6. The drop between the drop box and endcap inlet invert must be equal to or greater than 0.5 inches.

INTRODUCTION

Quick4 Standard Nominal Chamber Dimensions	
Size:	34"W x 53"L x 12"H
Storage Capacity:	44 gal
Invert Elevation:	8"

Quick4 High Capacity Nominal Chamber Dimensions	
Size:	34"W x 53"L x 16"H
Storage Capacity:	62 gal
Invert Elevation:	11.5"

Infiltrator IM-Series Tanks			
Tank	 **IM-540**	 **IM-1060**	 **IM-1530**
Applications	Suitable for use as a pump tank, trash-tank, rainwater (non-potable) tank, or as the second compartment of an in-series septic tank.	Suitable for use as a pump tank, septic tank or rainwater tank, shallow, multiple, and serial tank configurations.	Suitable for use as a pump tank, septic tank or rainwater tank, shallow, multiple, and serial tank configurations.
Working Capacity	475 gal (1799 L)	1094 gal (4141 L)	1537 gal (5818 L)
Total Capacity	552 gal (2089 L)	1287 gal (4872 L)	1787 gal (6765 L)

Before You Begin

Quick4 Chambers may only be installed according to State and/ or local regulations. If unsure of the installation requirements for a particular site, contact the local unit of government.

All systems require a design, which includes a thorough site and soil evaluation of system sizing and the issuance of a local permit to construct the system. The system installer must schedule required regulatory inspections.

Materials and Equipment Needed

- ☐ Quick4 chambers
- ☐ Endcaps
- ☐ PVC pipe and couplings
- ☐ Backhoe
- ☐ Laser, transit or level
- ☐ Shovel and rake
- ☐ Tape Measure
- ☐ Utility Knife
- ☐ Hole Saw*
- ☐ 2-inch Drywall Screws*
- ☐ Screw gun*
- ☐ Small valve-cover box*
- ☐ 4-inch cap for Inspection port

*Optional

These guidelines for construction machinery must be followed during installation.

- ☐ Avoid direct contact with chambers when using construction equipment. Chambers require a 12-inch minimum of compacted cover to support a wheel load rating of 16,000 lbs/axle or equivalent to an H-10 AASHTO load rating.
- ☐ Only drive across the trenches when necessary. Never drive down the length of the trenches.
- ☐ To avoid additional soil compaction, never drive heavy vehicles over the completed system.

Excavating and Preparing the Site

NOTE: As is the case with conventional systems, do not install the systems in wet conditions or in overly moist soils, as this causes machinery to smear the soil.

1. Stake out the location of all chamber lines. Set the elevations of the tank, pipe, and system bottom.

2. Install sedimentation and erosion control measures. Temporary drainage swales/berms may be installed to protect the site during rainfall events.

3. Excavate and level the trenches with proper center-to-center separation. Verify that the bottom of the system is level and that it is at least 3 feet above the limiting layer.

NOTE: Over excavate the trench width in areas where the chamber line will contour.

4. Rake the bottom and sides if smearing has occurred while excavating. Remove any large stones and other debris. Do not use the bucket teeth to rake the trench bottom. Minimize or avoid walking in the trench to prevent compaction, loss of soil structure, and the subsequent reduction in the soil's infiltrative capacity.

NOTE: Raking to eliminate smearing is not necessary in sandy soils. In fine textured soils (silts and clays), avoid walking in the trench to prevent compaction and loss of soil structure.

5. Verify that the bottom of the system is level using a level, transit, or laser.

Preparing the MultiPort Endcap

1. With a utility knife start the tear-out seal at the appropriate diameter for the inlet pipe. The seal allows for a tight fit for 3-inch, 4-inch SDR35, and 4-inch Schedule 40 pipe.

2. Pull the tab on the tear-out seal to create an opening on the endcap.

3. Snap off the molded splash plate located on the bottom front of the endcap.

4. Install splash plate into the appropriate slots below the inlet to prevent bottom erosion of the system.

5. Insert the inlet pipe into the endcap at the beginning of the chamber line. The pipe will go in several inches before reaching a stop. (Screws optional.)

1. Start tear-out seal.

4. Install splash plate.

5. Insert inlet pipe.

Preparing the Low Profile Endcap

1. With a hole saw, drill an opening appropriate for the pipe diameter being used (normally 3 to 4 inches) on the front of the endcap.

2. Snap off the molded splash plate located on the bottom front of the endcap.

3. Install splash plate into the appropriate slots below the inlet to prevent trench bottom erosion.

Installing the System

For installing the Quick4 Equalizer 24 Low Profile (LP) Chamber, see Installing the System with Q4 EQ24 LP section.

1. Check the inlet pipe to be sure it is level or has the prescribed slope. It may be firmly supported on a solid base of unexcavated soil (not required).

NOTE: If possible, avoid walking in the trench to minimize disturbance of the soil structure and loss of infiltrative capacity. Rake any areas where foot traffic has occurred in the trench.

2. Place the inlet end of the first chamber over the back edge of the endcap so that the chamber overlaps the endcap when in place.

2. Place first chamber onto endcap.

3. Lift and place the end of the next chamber onto the previous chamber by holding it at a 45-degree angle. Line up the chamber end between the connector hook and locking pin at the top of the first chamber. Lower it to the ground to connect the chambers.

NOTE: When the chamber end is placed between the connector hook and locking pin at a 45-degree angle, the pin will be visible from the back side of the chamber.

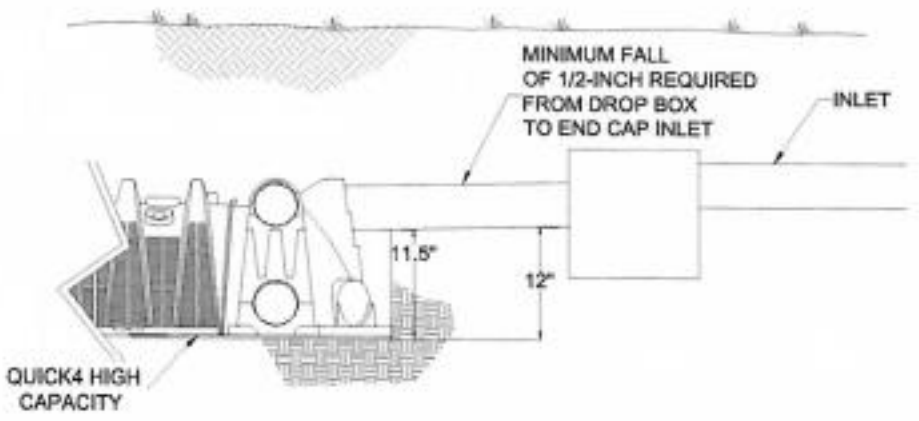
3. Connect the chambers.

NOTE: The connector hook serves as a guide to insure proper connection and does not add structural integrity to the chamber joint. Broken hooks will not affect the structure nor void the warranty.

4. Swivel the chamber on the pin to the proper direction for the trench layout.

NOTE: The Quick4 Standard chamber and Quick4 High Capacity chamber allow 10° of swivel in either direction at each joint. The Quick4 Equalizer 36 and Quick4 Equalizer 24 allow for 15° of swivel.

NOTE: If installing the Quick4 High Capacity chamber with the 20% bottom area reduction allowed in the product registration, make sure to provide at least 0.5-inches of fall from the drop box outlet to the endcap inlet to allow full use of the 12-inch sidewall profile (see drawing).



5. Continue connecting the chambers until the chamber line is completed.

NOTE: As chambers are installed, verify they are level.

6. The last chamber in the trench requires an endcap. Lift the endcap at a 45-degree angle and insert the connector hook through the opening on the top of the endcap. Applying firm pressure, lower the endcap to the ground to snap it into place. Do not remove the tear-out seal.

6. Attach endcap to chamber.

7. To ensure structural stability, fill the sidewall area by pulling soil from the sides of the trench with a shovel. Start at the joints where the chambers connect. Continue backfilling the entire sidewall area, making sure the fill covers the louvers.

8. Pack down the fill by walking along the edges of the chambers.

9. Proceed to the next chamber line and begin with Step 1.

Installing the System with Q4 EQ24 LP

1. Place the first chamber in the trench.

2. Place the back edge of the endcap over the inlet end of the first chamber. Be sure to line up the locking pins on the top of both the chamber and endcap.

Optional: Fasten the endcap to the chamber with a screw at the top of the endcap.

3. Insert the inlet pipe 2.5 inches into the opening on the front of the endcap.

4. Lift and place the end of the next chamber onto the previous chamber by holding it at a 45-degree angle. Line up the chamber end between the connector hook and locking pin at the top of the first chamber. Lower the chamber to the ground to connect the chambers.

4. Lock chambers together.

NOTE: When the chamber end is placed between the connector hook and locking pin at a 45-degree angle, the pin will be visible from the back side of the chamber.

NOTE: The connector hook serves as a guide to ensure proper connection and does not add structural integrity to the chamber joint. Broken hooks will not affect the structure or void the warranty.

5. For a trench layout, swivel the chamber on the pin to achieve the proper direction for the chamber line.

6. Continue connecting the chambers until the trench is completed.

Aitkin County

Detailed Parcel Report

Parcel Number: 29-1-513100

General Information

Township/City:	SHAMROCK TWP
Taxpayer Name:	HICK, KAREN
Taxpayer Address:	4200 DUPONT AVE S MINNEAPOLIS MN 55409
Property Address:	

Township:	49	**Lake Number:**	1906200
Range:	23	**Lake Name:**	BIG SANDY - BACK LOT
Section:	8	**Acres:**	0.00
Green Acres:	No	**School District:**	4.00
Plat:	REALCO ADDITION		
Brief Legal Description:	OUTLOT A		

Tax Information

Class Code 1:	Non-Comm Seasonal Residential Recreational
Class Code 2:	Unclassified
Class Code 3:	Unclassified
Homestead:	Non Homestead
Assessment Year:	2020

Estimated Land Value:	$35,000.00
Estimated Building Value:	$0.00
Estimated Total Value:	$35,000.00
Prior Year Total Taxable Value:	$35,000.00
Current Year Net Tax (Specials Not Included):	$300.00
Total Special Assessments:	$0.00
****Current Year Balance Not Including Penalty:**	$150.00
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.**

Aitkin County

Detailed Parcel Report

Parcel Number: 29-1-503701

General Information

Township/City:	SHAMROCK TWP		
Taxpayer Name:	HICK, KAREN		
Taxpayer Address:	4200 DUPONT AVE S MINNEAPOLIS MN 55409		
Property Address:	49836 204TH PL		
Township:	49	**Lake Number:**	1006200
Range:	23	**Lake Name:**	BIG SANDY LAKE
Section:	8	**Acres:**	0.00
Green Acres:	No	**School District:**	4.00
Plat:	SPIELHAUS ADDITION		
Brief Legal Description:	PT LOT 1 BLK 1 AS IN DOC 365978		

Tax Information

Class Code 1:	Non-Comm Seasonal Residential Recreational
Class Code 2:	Unclassified
Class Code 3:	Unclassified
Homestead:	Non Homestead
Assessment Year:	2020

Estimated Land Value:	$225,800.00
Estimated Building Value:	$201,900.00
Estimated Total Value:	$427,700.00
Prior Year Total Taxable Value:	$395,100.00
Current Year Net Tax (Specials Not Included):	$3,720.00
Total Special Assessments:	$0.00
****Current Year Balance Not Including Penalty:**	$1,860.00
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.**

Fiberglass Survey, Field & Utility Markers

5784

Identify boundaries, pipelines, cables, valve boxes, manholes, right of way easements, meter locations, etc., with these professional fiberglass markers. Weather-resistant fiber reinforced composite is temperature stable and UV resistant. Use the optional marker driver (SN 39222, sold separately) for easy installation. *Note: Custom labels and colors are available by special order. Call 800-647-5368 for details.*

Fiberglass Markers

	Survey	Wetland	Sewer Line	Water Line	Gas Line	Utility	Utility	Utility	Utility
Color	Orange	Brown	Green	Blue	Yellow	Orange	Green	Blue	Red
W	2-5/8	3-3/4	3-3/4	3-3/4	3-15/16	3-3/4	3-3/4	3-3/4	3-3/4
L	66	66	66	66	66	66	66	66	66
	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
	⚠	⚠	⚠	⚠	⚠	⚠	⚠	⚠	⚠
SN	39220	38852	38851	38850	38853	39221	38847	38848	38849
Each	$19.95	$23.50	$23.50	$23.50	$23.50	$19.95	$19.95	$19.95	$19.95
20+	$16.95	$20.25	$20.25	$20.25	$20.25	$16.85	$16.85	$16.85	$16.85
50+	$15.75	$18.75	$18.75	$18.75	$18.75	$15.60	$15.60	$15.60	$15.60

⚠ **WARNING:** Cancer – www.P65Warnings.ca.gov.

Utility Marker Driver

5785

For installing fiberglass boundary and utility markers (sold separately). Insert the marker into the driver with the pointed end exposed. Rotate the driver into installation position and drive the marker into the soil with a series of light taps until the desired depth is reached.

Utility Marker Driver ⚠ **39222** **$175.95**

Wood Survey Stakes

1129

Durable, long-lasting stakes are cut from Southern yellow pine. Points are saw-formed to ensure all sides are equal so stakes drive straight. *Note: Due to manufacturing tolerances, product dimensions may differ slightly.*

Wood Survey Stakes

	1 x 2 Flats				2 x 2 Hubs				◆ 2 x 4 Corner			1 x 1 Guard Stakes				3/8 x 2 Lathes			
	SN	Bundle	Each	5+	SN	Bundle	Each	5+	SN	Bundle	Each	SN	Bundle	Each	5+	SN	Bundle	Each	5+
6"	39515	50	$12.50	$10.95	39511	25	$12.25	$10.95											
8"					39545	25	$12.75	$11.75											
12"	39514	50	$13.50	$11.95	39512	25	$14.75	$13.25											
18"	39516	50	$18.25	$15.75	39513	25	$19.50	$17.95											
36"	39520	50	$32.75	$29.75												39536	50	$12.75	$11.25
48"	39523	◑ 25	$23.25	$21.50					39537	⊗ 10	$27.25	39517	50	$27.25	$26.50	39546	50	$23.95	$22.25
58"												39519	⊗ 50	$38.75	$36.75	39535	⊗ 50	$33.25	$31.25
												39518	⊗ 50	$47.50	$45.25				

Stake Whiskers

1128

The 5-1/2" flexible plastic tops spring back if run over. Fit all wood stakes. Bundle of 25.

Stake Whiskers

	Blue	Red	Yellow	Orange	Green	Pink
	33775	33776	33777	33778	33779	33780
Each	$3.45	$3.45	$3.45	$3.45	$3.45	$3.45
20+	$2.95	$2.95	$2.95	$2.95	$2.95	$2.95
50+	$2.85	$2.85	$2.85	$2.85	$2.85	$2.85

◑ Carrier may require an additional handling charge.

Hi-Vis Barrier Fencing

1627

High visibility temporary barrier fencing is UV stabilized to prevent fading. Resists corrosion and rot. Reusable. Hi-Vis Orange.

Barrier Fencing

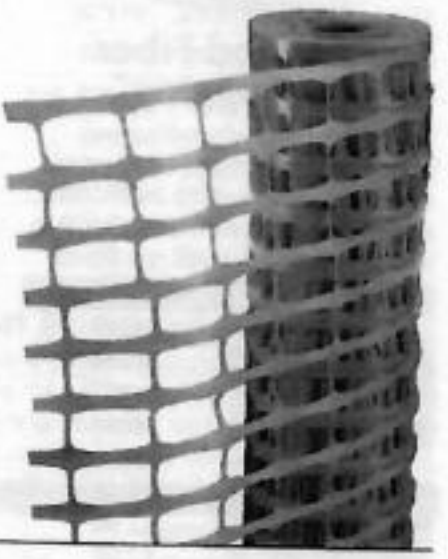
4' x 100' 12 lb. Non-Stretched Fence, *1.75" x 1.75" Holes*

		Each
24919	◑	$31.95

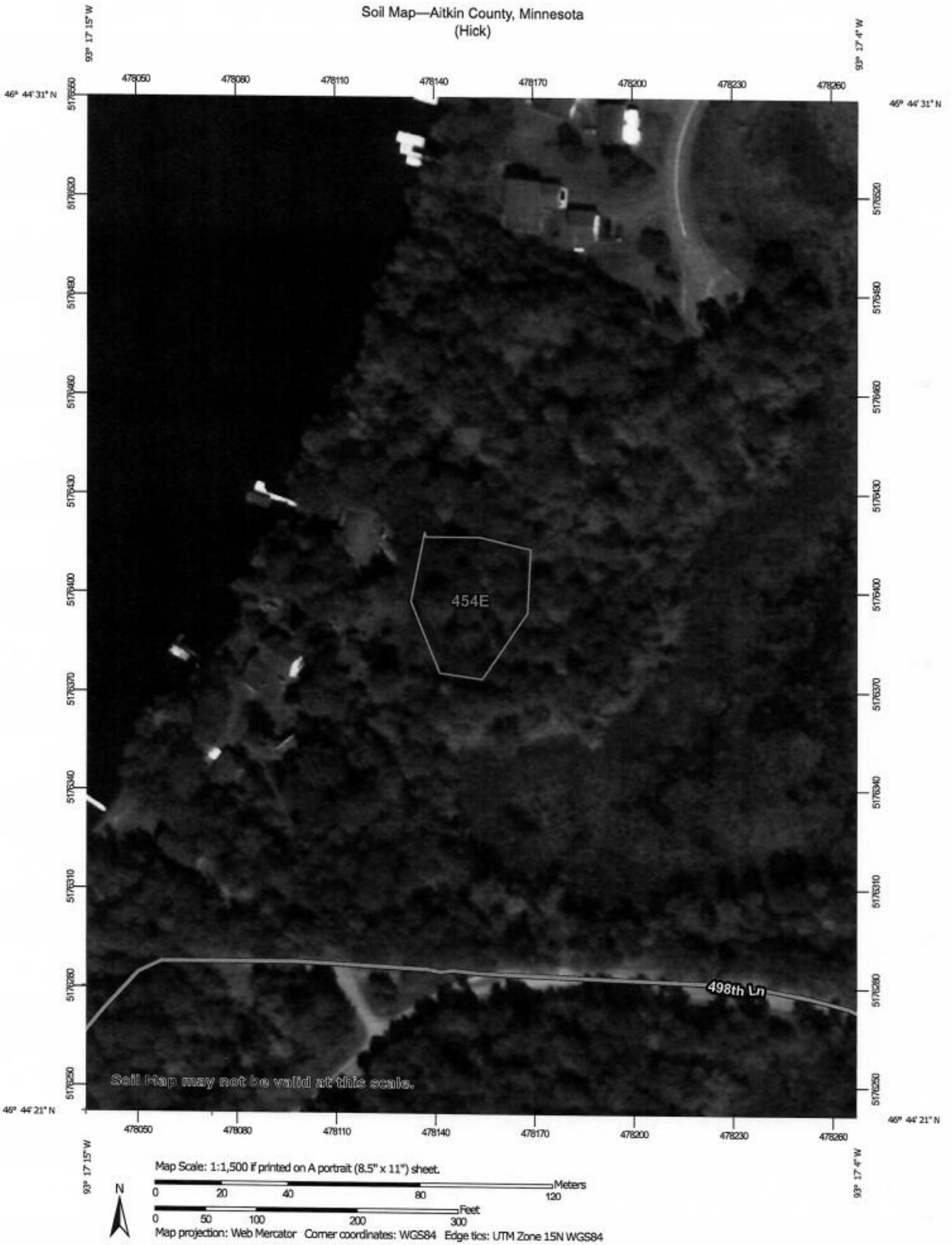
Cable Ties

8" Plastic Zip Ties, *Pack of 1000*

		Each	3+
17032		$34.95	$32.25



Soil Map—Aitkin County, Minnesota
(Hick)



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

USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

10/12/2020
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Aitkin County, Minnesota

454E—Mahtomedi loamy coarse sand, 12 to 25 percent slopes

Map Unit Setting

National map unit symbol: gjgy
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

Mahtomedi and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mahtomedi

Setting

Landform: Outwash plains
Landform position (two-dimensional): Shoulder, backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and gravelly outwash

Typical profile

A - 0 to 1 inches: loamy coarse sand
E - 1 to 14 inches: loamy coarse sand
Bw - 14 to 25 inches: gravelly sand
C - 25 to 60 inches: gravelly sand

Properties and qualities

Slope: 12 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Steep; Coarse Testure; Low AWC (G090AN018MN)

Other vegetative classification: Steep; Coarse Testure; Low AWC (G090AN018MN)
Hydric soil rating: No

Minor Components

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

Soils with less gravel
Percent of map unit: 2 percent
Hydric soil rating: No

Meehan and similar soils
Percent of map unit: 2 percent
Hydric soil rating: No

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

Soils with more gravel
Percent of map unit: 2 percent
Hydric soil rating: No

Data Source Information

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