

Preliminary & Field Evaluation Form

www.SepticResource.com vers 12.4

Owner Information

Date 10/31/2019 Sec / Twp / Rng _____ PID # 07-0-046115 Exception Area _____
 Parcel ID 07-0-046103 LUG (county, city, township) Aitkin Co.
 Property Owner: Terry Ruskell Owners address (if different) _____
 Property Address: 41235 300th Ln. Aitkin MN 56431 14721 South Point Curve
 City / State / Zip: _____ Burnsville MN 55306

Flow Information and Waste Type / Strength

Estimated Design flow 750 Anticipated Waste strength Hi Strength Domestic
 Comments: 2 cabins one 3 bedroom , one 2 bedroom Any Non-Domestic Waste Yes (class V) No
Exception Area across 300th LN.(Owner is Marks Trust) Sewage ejector/grinder pump Yes No
Ruskell will have there own 5 bedroom Pressure Bed Water softener Yes No
Ruskell's Pressure bed will be on West side of Wendland's 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 Deep Well (758689)
 Easements on lot located (see site map) Yes No Drainfield w/in 100' of residential well Yes No
 Property lines determined (see site map) Surveyed Yes No Site w/in 200' of transient noncommunity water supply (TNCWS) Yes No
 Required 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 Ruskell's P-Bed is on West Side of Wendland's P-Bed, Both are in the Exception Area, Parcel 07-0-046115

Soil Information / Ruskell's Pressure Bed Area

		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>72"</u>	Flooding or run-on potential (comments)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Depth to system bottom maximum (or elev minimum)	Bottom of <u>Rockbed</u> Elev.= 97.3' or (1.5' deep)		
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

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Owner Information

Property Owner / project: Terry Ruskell Date 10/31/2019
 Property Address / PID: 41235 300th Ln. Aitkin MN 56431

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: 502 & 504B slope 1 % direction- South

Soil Log #1A Ruskell Area

Boring Pit Elevation 99.1' 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 - 20	Sandy Loam	<35	10YR5/4		Loose	Loose	Granular
20 - 46	Med Sand	<35	10YR5/4 With Fine Sand Layers 1/4" to 1/2"		Loose	Loose	Granular
46 - 84	Med Sand	<35	10YR6/4		Loose	Loose	Granular
		<35					

Comments:

4 235 300th Ln. Aitkin MN 56431 Soil Log #2A Ruskell Area							
		<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation <u>99'</u>		Depth to SHWT <u>72"</u>	
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
0 - 6	Topsoil Sandy Loam	<35	10YR3/2		Loose	Loose	Granular
6 - 18	Sandy Loam	<35	10YR5/4		Loose	Loose	Granular
18 - 36	Med Sand	<35	10YR5/4 With Fine Sand Layers 1/4" to 1/2"		Loose	Loose	Granular
36 - 63	Med Sand	<35	10YR6/4		Loose	Loose	Granular
63 - 72	Fine sand	<35	10YR5/4		Loose	Loose	Granular

4 1235 300th Ln. Aitkin MN 56431 Soil Log #2A Ruskell Area							
		<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Pit	Elevation <u>99'</u>		Depth to SHWT <u>72"</u>	
Depth (in)	Texture	fragment %	matrix color	redox color	consistence	grade	shape
72 - 80	Med Sand	<35	10YR6/4	Layers 7.5YR5/6	Loose	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
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive
		<35 35 - 50 >50			loose friable firm rigid	loose weak moderate strong	single grain granular blocky prismatic platy massive

I hereby certify this work was completed in accordance with MN 7080 and any local req's.


 Designer Signature

Brummer Septic LLC.
 Company

L-1347
 License #

Pressure Bed Design

Property Owner: Terry Ruskell Date: 10/31/2019

Site Address: 41235 300th Ln Aitkin MN 56431 PID: 07-0-046103

Comments: This is a Dual Pump , split pressure bed

instructions: = req'd input = input or default = calculated field *** = installer info

- 1) 5 bedroom Type I Residential System
- 2) 750 GPD design flow
- 3) Yes Garbage disposal or pumped to septic 50% larger tank w/mult comp/tanks, effluent filter & alarm req'd
Install Jacobson 1500 and 1650 2/ Compartment tank
- 4) *** 2250 Gallon septic tank (minimum) Tank options: multiple tanks or compartments req'd
- 5) 0.60 GPD/ft² Soil Loading Rate 1250 ft² bed req'd, or 1250 ft² LUG minimum
(must match soil boring log)
- 6) *** 16.0 ft desired bed width, leads to a 78.1 ft bed length
(25' maximum)
- 7) *** 3.0 ft lateral spacing 3.0 ft perforation spacing (maximum 3 for both)
 end feed manifold connection
See Notes on Pressure Bed
- 8) *** XXX laterals XXX feet long XXX perfs / lateral XXX perfs total
(1/2 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
(If bed has > 1' of cover, increase residual head for cleanout req's)
for this perf size & spacing, & pipe size on line 12, max perfs/lateral = 19, line #8 must be less -->
- 10) 8 doses per day (4 minimum) Each Pump will be 4 doses per day
- 11) 94 gallons per dose (treatment volume)
- 12) 1.00 inch diameter laterals (or smaller) will meet "5x pipe volume"
*** 1.50 inch diameter laterals (or smaller) must be used to meet "4x pipe volume" requirement
1.25 inch diameter laterals (or smaller) will meet "3x pipe volume"
- 13) *** 180 feet of 2.0 inch supply line leads to 31 gallons of drainback volume
("top feed" to control the drainback)
- 14) 125 gallons TOTAL pump out volume (treatment + drainback)
- 15) 24 feet vertical lift from pump to dispersal area, leads to a
- 16) *** XXX GPM @ XXX feet of head, Pump requirement Each Pump will be 38 GPM at 38 Ft. Head.
(>50 gpm may require additional 3-6' head allowance for discharge assy)

See Dual Pump Notes

17) *** 533 gal Dose tank (minimum) at 12.69 gpi Dual Pumps

18) *** 9.9 inch swing on Demand float, or Timed dosing of 1.7 min ON (confirm pump rate with drawdown
 (<100% of design flow requires a larger OFF time) 3 hrs OFF test and adjust as necessary)

19) 12 inches of from bottom of tank to "pump OFF" float, and/or to cover pump

20) *** 22 inches from bottom of tank to "pump ON" float, or 12 inches to "timer ON" float

21) *** 25 inches from bottom of tank to "Hi Level" float (add 5-15 inches if Time Dosed)

22) 216 gallons reserve capacity (after High Level Alarm is activated)

23) 72 inches, or 6.00 ft. to Redox or other limiting condition (This must match the soil boring log)

24) 36 inches, or 3.00 ft. of vertical separation required Bottom of Rock bed at Elv.= 97.3'
 leads to bottom of rock no more than:

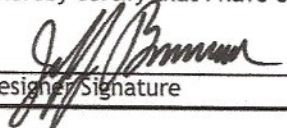
25) *** 36 inches, or 3.0 ft. Below existing grade CRITICAL FOR FUTURE CERTIFICATIONS!!!

26) *** 9 inches of rock below the pipe Bottom of Rockbed Elv.= 97.3' (Approx. 1.5 ft. deep)
 3 inches of rock to cover the pipe

27) Overall Dimensions: 16.0 ft. wide by 78.1 ft. long Pressure Bed

28) *** Rock Bed materials:
 16 ft. by 78.1 ft. by 12 inches total, plus 20% gives 56 yd³ or *1.4= 78 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#

10/31/2019
 Date

Installer Summary

Duel Pumps to be used See Notes.

gallon Septic tank (minimum)

multiple tanks Install Jacobson 1650 & 1500 Gallon septic
50% larger tank w/mult comp/tanks, effluent filter & alarm req'd

gallon Dose tank (minimum)

at gpi

GPM @ ft. of head, Pump required Each Pump will be at 38 GPM and 38 FT. head.

inch swing on Demand float or minutes ON time & hours OFF time

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

inches from bottom of tank to "Hi Level Alarm" float

ft. of inch supply line with manifold connection

laterals inch diameter feet long ft lateral spacing

inch perfs ft perforation spacing

Effluent filter & alarm

clean out & valve box assembly

Pressure Bed:

ft. wide by ft. Long Two manifolds in rockbed Duel pumps.

Bottom of rock no more than:

inches, or ft. Below existing grade

inches of rock below the pipe

Overall Dimensions: ft. wide by ft. long Pressure Bed

Rock Bed materials: yd³ or *1.4= ton

INSPECTOR CHECKLIST - Pressure bed

- 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: outer ditch, or 33' from center of township road, or 65' from center of cnty road
- LAKE / BLUFF setback: 20' for bluff. Lakes: gen 50', rec 75', nat 150'. Protected wetland 50'.
- Building setbacks: 10' for everything, 20' for dispersal area.
- WATER LINE under pressure 10' to bed, tank & sewer line.
- Sewer line & baffle connection (no 90's, 3' between 45's, slope of 1/8"/ft, or 1" in 8', or 1' in 96'.
(no depth req's, clean out every 100', Sch 40 D2665 or F891)
- Septic tank and risers (water tight, insulated, proper depth, existing verified by pumping)
mfg _____ 2250 gallons multiple tanks or compartments req'd
- Riser over outlet, riser over inlet, 6"+ inspection pipe over any remaining baffles.
- Yes effluent filter & alarm
- Dose tank risers and piping (water tight, insulated, proper depth, drainback)
mfg _____ 533 gallons
- dose pump _____ 73 gpm 57 head VERIFY PUMP CURVE 1.7 M on 3 H off
- float setting drop 9.9 inches
LABEL pump requirements and drawdown on riser or panel
- Cam lock, weep hole, supply line access (no hard 90, pipes reachable from grade)
- supply pipe sloped 1/8"+, supported by sch40 sleeve, and buried 6"+.
- splice box / control panel / electrical connections
- Bed dimensions 16 X 78.1
- Rock depth below pipe 9 inches
- Rock bottom elevation 36.0 inches from Grade to bottom of rock (max)
- cover depth of 12"+ VERIFY
- 5 laterals (1-2' from edge of rock)
- 1.50 inch pipe size (bigger is ok but do not exceed 4 times pipe volume)
- 3.0 ft lateral spacing
- 7/32 inch perforations (smaller is ok)
- 3.0 ft perforation spacing
- Air inlet at end of laterals, and at top feed manifold. VERIFY
- clean outs (deep bed 2' of head) (no hard 90's)
- 4" inspection pipe to bottom of rock, anchored VERIFY
- Abandon existing system if necessary
- monitoring plan and type _____

Aitkin County { 2 pump Design Pump selection }

Property Owner: Terry Ruskell Date: 10/31/19 Designer's Initials: JB

DETERMINE PUMP CAPACITY for each pump

- 1) Gravity Distribution Pump Capacity Range: 10 - 45 GPM
 *Skip to Pump Head Requirements if pumping to gravity
- 2) Pressure Distribution :
 - 2a. Number of Laterals : 5 *Each Half*
 - 2b. Lateral Size : 1.5 inches
 - 2c. Perforation spacing: 3 ft.
 - 2d. Check Table 4 to see the Max. number of perforations per. Lateral.
- 3) Lateral Length (choose) :
 - 3a. End manifold: Rock bed Length : 39 ft. - 2 ft. = 37 ft.
 - 3b. Center Manifold: Rock bed Length: 2 ft. ÷ 2 - 1 = 0 ft.
 - 3c. Choose 3a or 3b: 37 ft.
- 4) Total Perforation Determination :
 - 4a. (3c.) 37 ft. ÷ (2c.) 3 ft. + 1 = 13.3 Perf per. Lateral
 - 4b. (4a): 13.3 x (2a) : 5 = 66.7 Total Number of Perfs.
 - 4c. Select Perf. Discharge from Table 1 = 0.56 GPM/Perf.
 - 4d. (4b): 66.7 x (4c) : 0.56 GPM/Perf. = 37.33 GPM

Ft. of Head	7/32" Perf. Diameter	1/4" Perf. Diameter
1.0	0.56 in.	0.74 in.
2.0	0.80 in.	1.04 in.

use 1.0 for single homes, 2.0 for everthing else.

Flow (GPM)	1.5"	2.0"	3.0"
20	2.47	0.73	0.11
25	3.73	1.11	0.16
30	5.23	1.55	0.23
35	6.96	2.06	0.30
40	8.91	2.64	0.39
45	11.07	3.28	0.48
50	13.46	3.99	0.58
55		4.76	0.70
60		5.60	0.82
65		6.48	0.95
70		7.44	1.09

Pipe Diameter	Gal/ft.
1.25 in.	0.078
1.5 in.	0.11
2.0 in.	0.17

Perf. Spacing	1.25" pipe	1.5" pipe	2" pipe
2.5 ft.	14	18	28
3 ft.	13	17	26
3.5 ft.	12	16	25
4 ft.	11	15	23
5 ft.	10	14	22

PUMP HEAD REQUIREMENTS

- 5) Elevation Difference:
 - 5a. Elevation difference between pump and point of discharge: 24 ft.
 - 5.b If pumping to a pressure distribution system (5a) + 5 = 29 ft.
 - 5c. Choose (5a) for gravity, (5b) for pressure: 29 ft.
- 6) Friction Loss:
 - 6a. Select a value from Table 2: 3.28 ft. per. 100 ft. Pipe.
 - 6b. Pipe Length to Drainfield : 180 x 1.25 = 225.0 Ft.
 - 6c. (6a) x (6b) ÷ 100 = 7.38 Total Friction Loss
- 7) Drainback: (from Table 3)
 - 7a. Actual pipe length : 180 ft. x 0.110 gal/ft. = 19.8 Gallons.
19.8 Gallons of Drainback
- 8) Total Head Calculation:
 - 8a. (5c): 29.0 + (6c) : 7.38 ft. = 36.38 Head
- 9) Minimum Pump Size 37 GPM & 36.38 ft. of dynamic Head.

Use 38 GPM and 38 Ft. Head for pump sizing curve

Bed length = (1ft. End) + (37ft. Lateral) + (2ft. Manifolds) + (37ft. Lateral) + (1ft. End) = 78 feet.

Page: _____ Of _____

Pressure Bed Design Notes - Aitkin county

Property Owner: Paul Boucher Date: 10/8/2019
Site Address: 41351 300th Ln. Aitkin MN 56431 PID: 07-0-046106
Comments: Type I Pressure Bed / 5 bedroom

- 1 This is a type I Pressure Bed for a Existing 5 bedrooms total, House and cabin.
The Existing tanks can not be abandon until all others on system are unhooked from the existing system.
Existing tanks will be pumped, collapsed, removed. Existing drainfield to be abandon.
- 2 **It is recommended that Ruskell and Wendland have same installer and install drainfields at same time.**
- 3 Install the two 2" supply pipes to the pressure bed along the West property line. Installer may try to use same trench to cross 300th Lane for both Ruskell and Wendland.
The 2" supply pipes, (Ruskell & Wendland) will have to cross each other on the North side of the road.
- 4 **Mark both sides of road, (with something permeant) were pipes cross for future locations.**
Install Ruskell's pressure bed West of Wendland's bed. Installer should mark both beds corners when completed.
- 5 Soil separation is at 72" at North end, of pressure bed area for Ruskell.
- 6 There is an existing Deep wells to the East of septic tank location, top of well cap is Elv.=86.3'.
Owner will redo landscaping on North side of house. Existing sewer pipe is above grade under step.
- 7 Install 540 lift tank approx. 30 ft. North of steps, gravity flow from house, See pump tank sheet for pump sizing.
Install the 540 gal Infiltrator lift tank as high as possible, (it maybe in water) and add additional cover soil to try to keep tank from moving, (see Tank Buoyancy sheets). Installer should install with at least 24" of cover.
Install 2" supply pipe along driveway up to 1500 septic tank (Side inlet), install with drainback to lift tank.
The 2" supply pipe has to stay 20 ft. or more from any well. Pressure test all new plumbing for this system.
See Notes on 540 lift tank sheet for pump settings an sizing. Grinder pump = 15ft. Head & 15 GPM
- 8 Owner has a cabin that will need to have a new 4" sewer pipe installed with gravity flow to 1500 septic tank, front inlet.
Order 1500 single compartment septic tank with a side inlet for 2" supply pipe from house.
Install 1650 gal. (1120 septic/ 533 pump) tank in series with gravity flow from 1st 1500 gal. septic tank.
- 9 Bench Mark (Elv. = 100') is nail on tree South of proposed pressure bed. *North side of 300th Ln.*
- 10 The Pressure bed area will be 16 ft. wide and 78 ft. long. Bottom of rock approx. Elv = 97.3'.
Elevation of the bottom of the rock bed should be approx. 97.3'
Cover rock bed with fabric and 12" to 18" of soil.
- 11 Installer to double check bench mark. Installer should confirm bench mark height Elv. with inspector.
Installer should record bench mark Elv. and bottom of rockbed height on installation inspection form.
It is important that the soils do not get compacted, and area stays protected.
- 12 The 1500 & 1650 tanks are to meet all setbacks. . Install 2 pumps with duel pump control panel.
Control panel will use alternating pump cycles, split laterals into 2 separate parts, one per pump. 2 manifolds at bed center.
- 13 With duel pumps the tank can be below 750 gallons. Install the pumps for 8 demand doses, (4 doses each pump) per day. approx. 120 gallons per dose, 9.5 inches of tank level. Install alarm at 3 inches from pump on level.
Install 2 pumps with 38 GPM and 38 Ft. head. Pump Calculations in design sheets are for the Pump to Drainfield.
- 14 **Install Effluent Filter in 2nd septic tank outlet, with electric alarm on effluent filter.**
Install all manholes, inspection pipes and clean-outs to grade or above, including lift tank. Insulate tanks.
- 15 Install both 2" supply pipe from 533 pump tank to 2 end manifold in rock bed, install so pipes drainback to pump tank.
- 16 Install 1.5" laterals with 9" of rock under them. Install clean-outs at far end of laterals.(12" total inches of rock)
Drill 7/32" perf holes spaced 3 ft. apart.
Install inspection pipe to bottom of rock bed, secure in rock bed and raise to above final grade.
- 17 Installer will pressure test and squirt height laterals when finished. Give info to owner.
- 18 Owner is responsible to maintain protection of bed area through construction of septic system.
Designed to Aitkin Co. and MPCA recommendations and requirements.

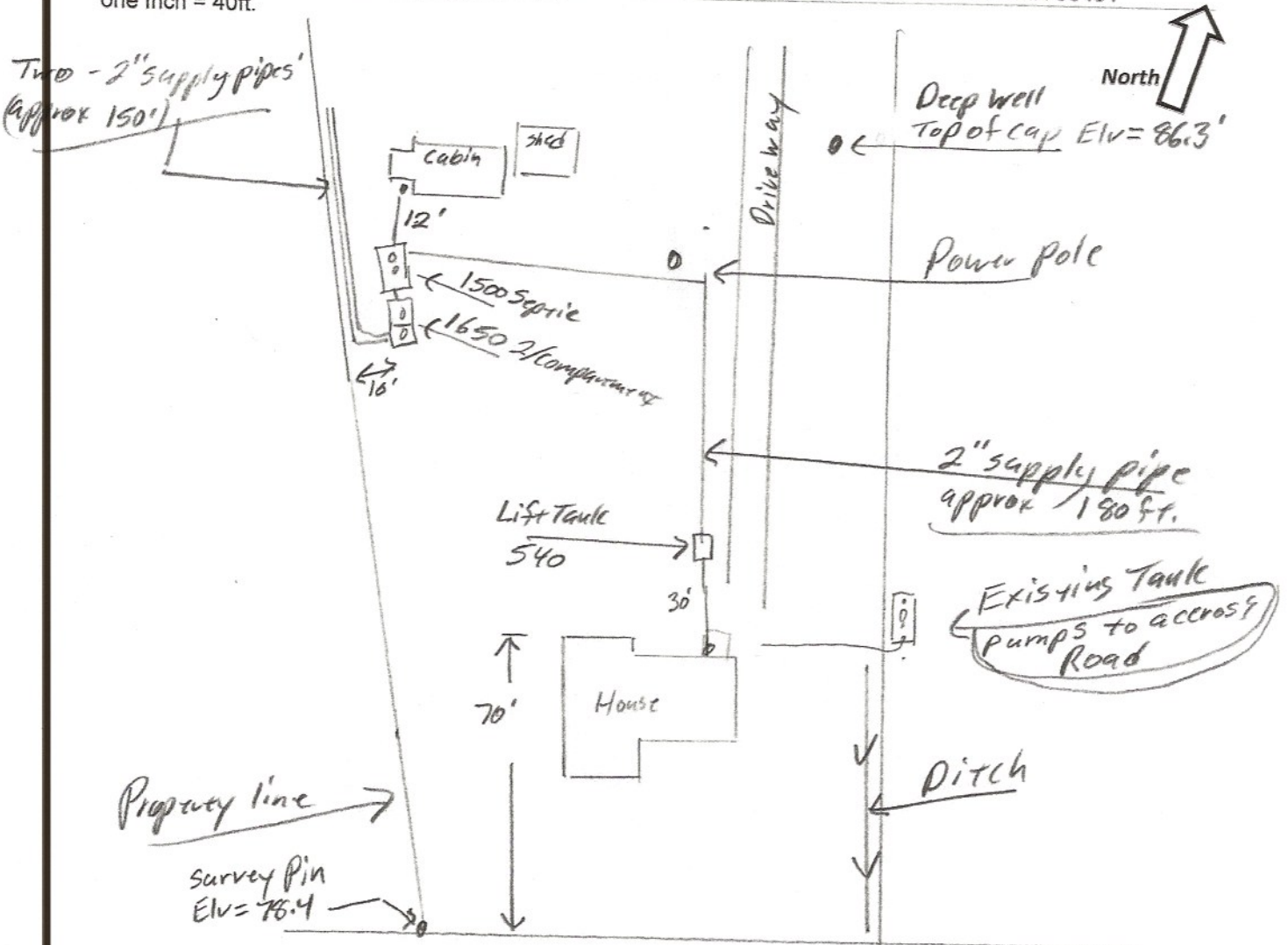
Designer Signature:  Design Company: Brummer Septic LLC. License#: L-1347

There will be 3 tanks, 540 lift near house, 1500 septic, and 1650 2/Compartment 1120 septic / 533 pump.
There will be a single grinder pump near house to lift sewage up to septic tank.
There will be duel pumps for the pressure bed with a control panel capable of alternating pump cycles.
There will be an Effluent filter on the 2nd septic tank outlet, with an electric alarm on effluent filter.
There will be a total of 3 alarms, 540 lift tank alarm. Effluent filter alarm, duel pump tank alarm.
It is the installer and Owners responsibility to understand how this system operates and what alarms are for.

12485RFT

{ Design Drawing }

Property Owner: Terry Ruskell Date: 10/31/19 Designer's Initials: JB
 Parcel ID. Number: 07-0-046103 Address: 41235 300th Ln. Aitkin MN 56431
 one Inch = 40ft.



Top of Ruskell Well Cap Elv. = 86.3'
 Nail in Stump near Wendland's House Elv. = 84'
 Top of Survey pin West line of Exception area Elv. = 100'
 10/31/2019 Lake Elv. = 77.1'

spirit lake

Surface/ SHWT	Nail on Tree = Bench Mark 100'		Existing Grade Pressure Bed	
Soil Bore 1A 99.1' / 84"	Bench Mark	100'	NW elv. = 99.2'	NE Elv. = 99'
Soil Bore 2A 99' / 72"	Ground Elv. Lift Tank	78.4'	SW Elv. = 99.2'	SE Elv. = 99.1'
	Ground Elv. 1500 Tank	84.2'	Bottom of Rock Bed Elv. = 97.3'	
	Ground Elv. 1650 Tank	82.8'		
Existing Cabin Cleanout = 85.3'	Existing house Elv. = 79.9'	Sewer pipe		
	Existing house	78.7'		

Please show all that apply (Existing)

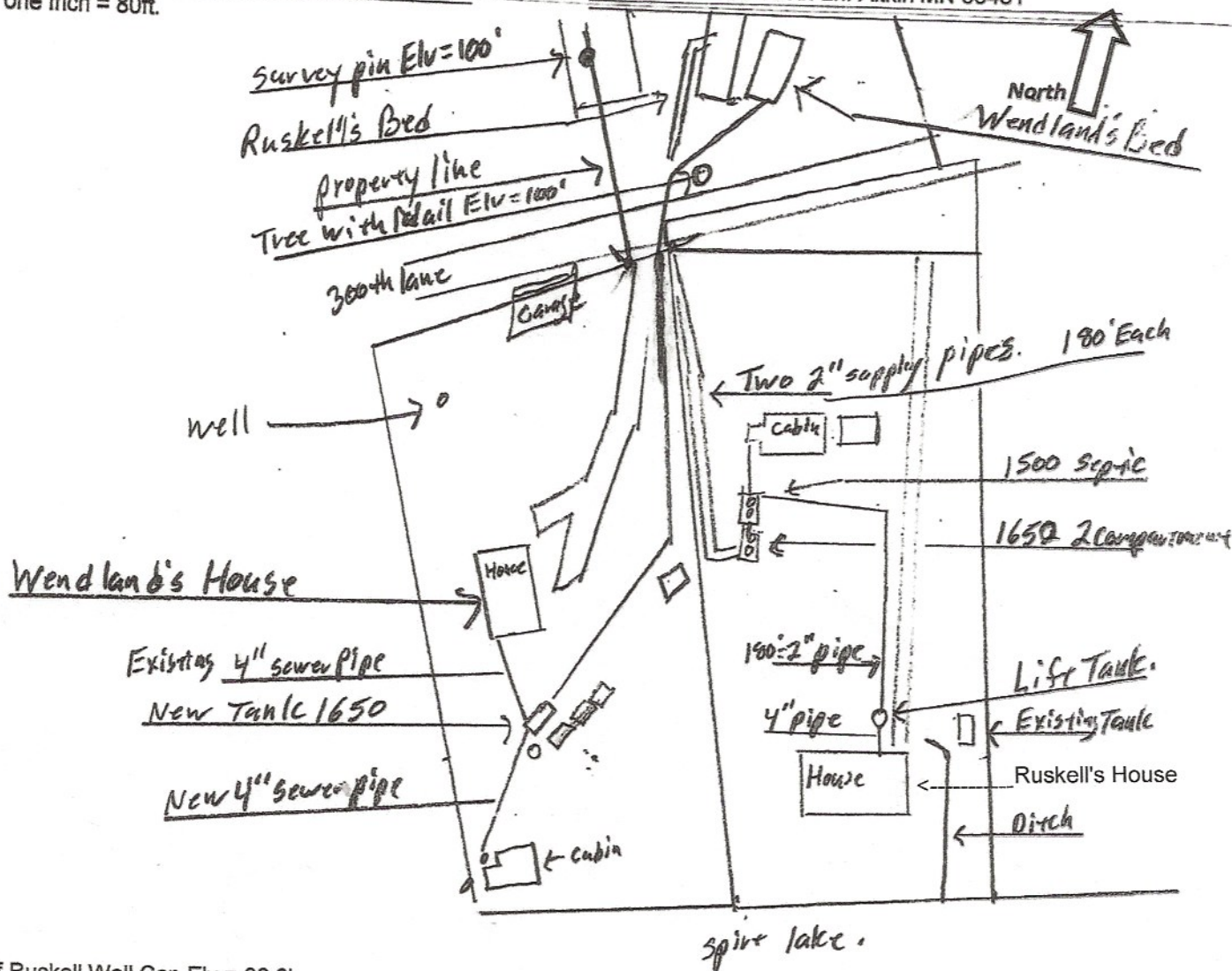
Please Draw to Scale with North to Top or Left Side of Page:

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

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

{ Design Drawing }

Property Owner: Terry Ruskell Date: 10/31/19 Designer's Initials: JB
 Parcel ID. Number: 07-0-046103 Address: 41235 300th Ln. Aitkin MN 56431
 one Inch = 80ft.



Top of Ruskell Well Cap Elv.= 86.3'
 Nail in Stump near Wendland's House Elv.= 84'
 Top of Survey pin West line of Exception area Elv.= 100'
 10/31/2019 Lake Elv.= 77.1'

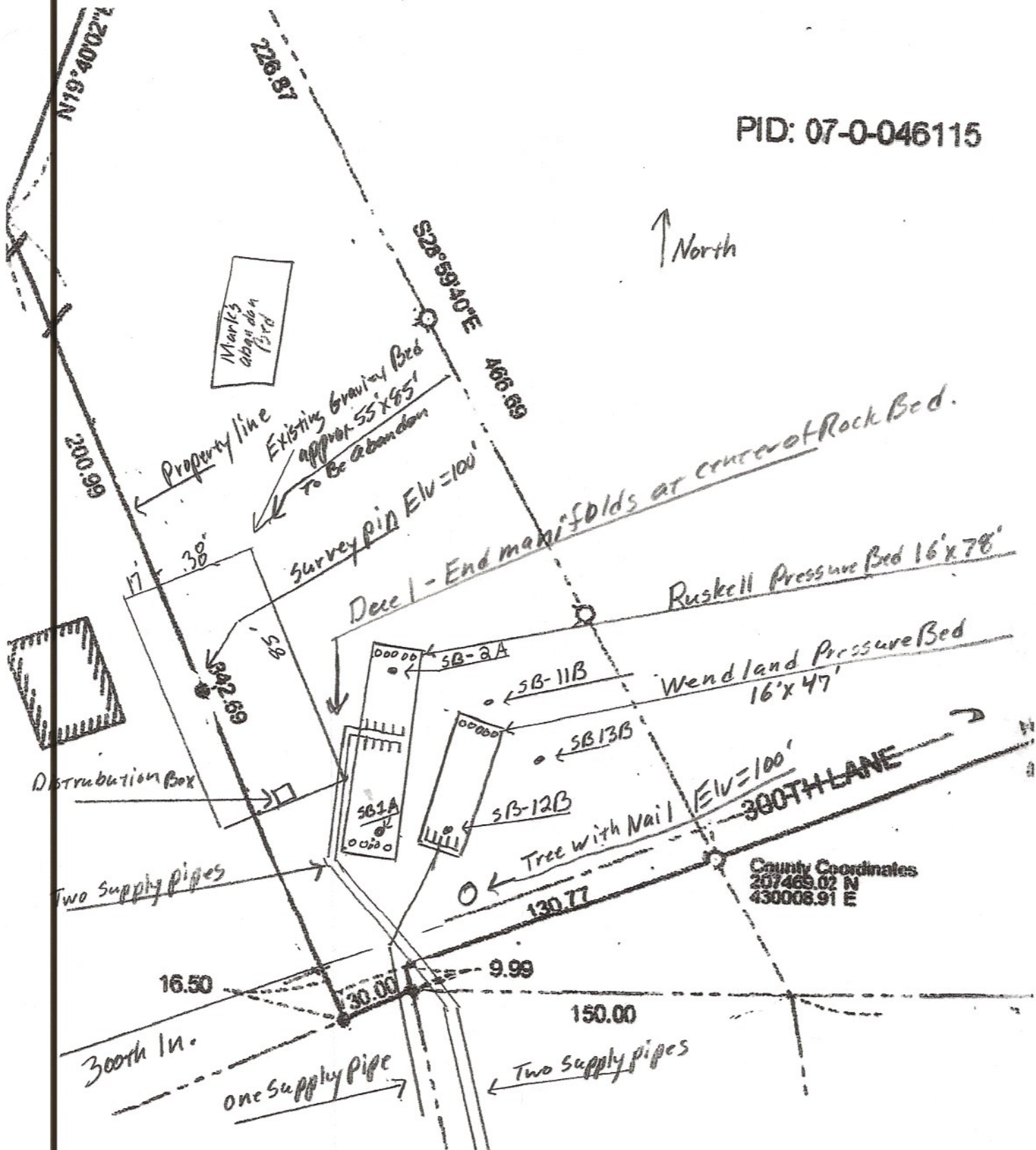
2
 180
 180
 180
 540

	Surface/ SHWT	Nail on Tree = Bench Mark 100'		Existing Grade Pressure Bed	
Soil Bore 1A	99.1' / 84"	Bench Mark	100'	NW elv.=99.2'	NE Elv.= 99'
Soil Bore 2A	99' / 72"	Ground Elv. Lift Tank	78.4'	SW Elv.= 99.2'	SE Elv.= 99.1'
		Ground Elv. 1500 Tank	84.2'	Bottom of Rock Bed Elv.= 97.3'	
		Ground Elv. 1650 Tank	82.8'		
		Existing house	Elv.=79.9'	Sewer pipe	
Existing Cabin Cleanout	=85.3'	Existing house	78.7'		

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
- Component Location
- OHW ordinary high water
- Lot Easements
- Access Route for Tank Maintenance
- Property Lines
- Structures
- Setbacks



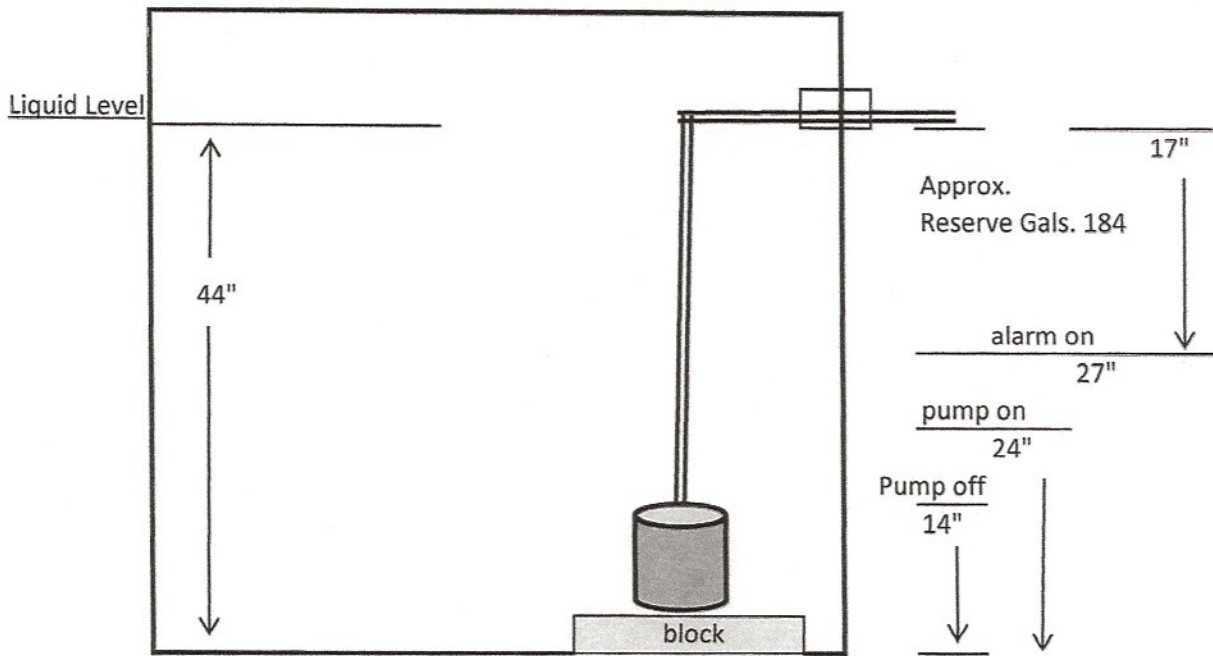
County Coordinates
207469.02 N
430008.91 E

Pump settings for 540 gal lift tank.

Terry Ruskell

Parcel ID. 07-0-046103

Tank Mfg. Infiltrator IM-540 Lift Tank 475 working gallons
 Tank Size: MFG. 10.79 gals. Per inch



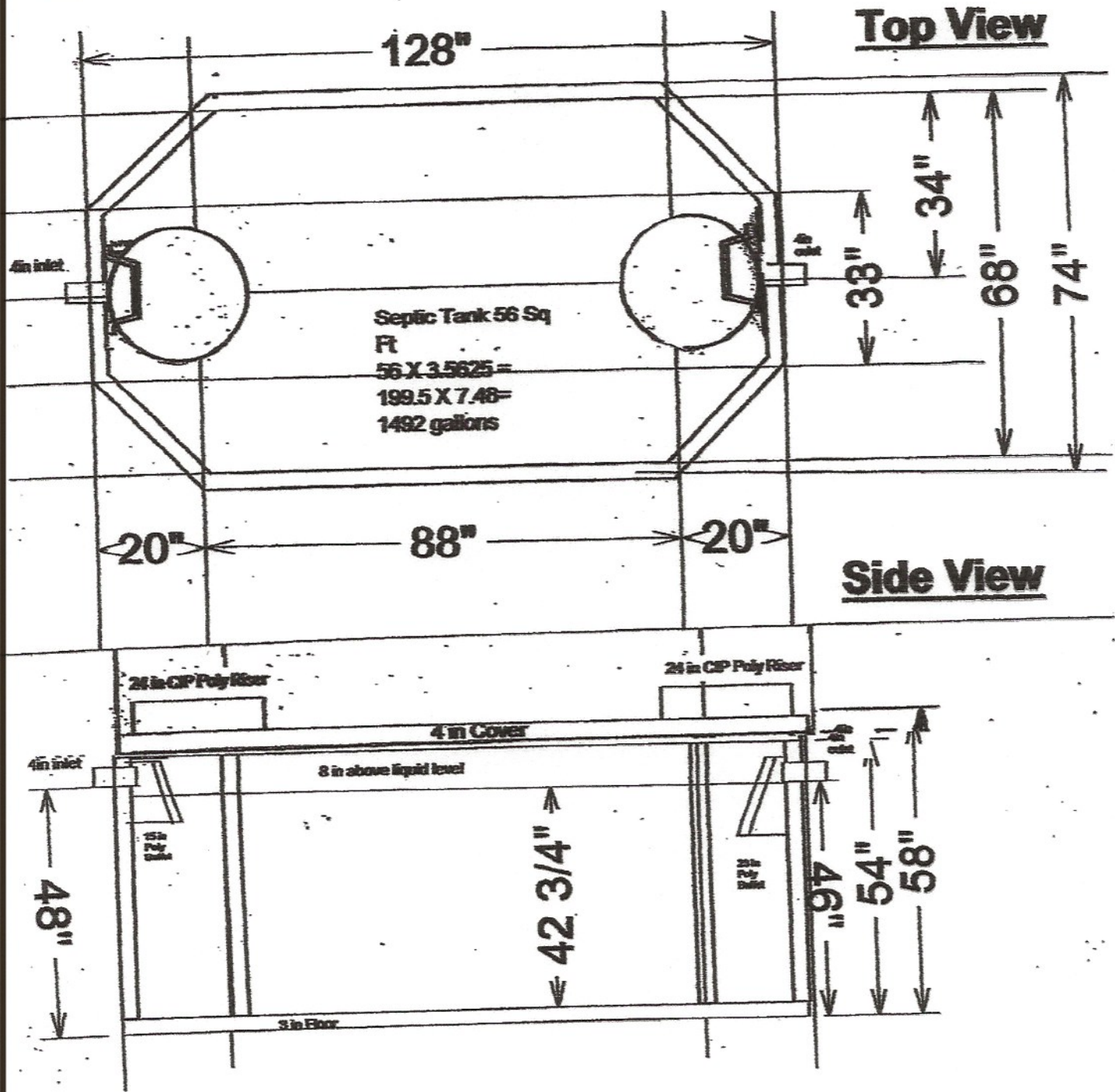
Assumes 10" pump
 Pump out dose at 9.8" = (75 gals. dose + 31 drain back) = 106 pump out gals.
 $450 \text{ gpd} \div 6 = 75 \text{ gals. Per Dose}$

Drain back for 180 ft. of 2" supply pipe is = 31 gallons

Bottom of lift tank approx. Elv.= 76'
 Inlet of 1500 Septic tank Approx. 83' approx. 8ft. Difference
 Use 15 ft. At 15 GPM , minimum as head calculation for Lift pump

1500 GALLON SINGLE COMPARTMENT SEPTIC TANK

Weight = 9500 #

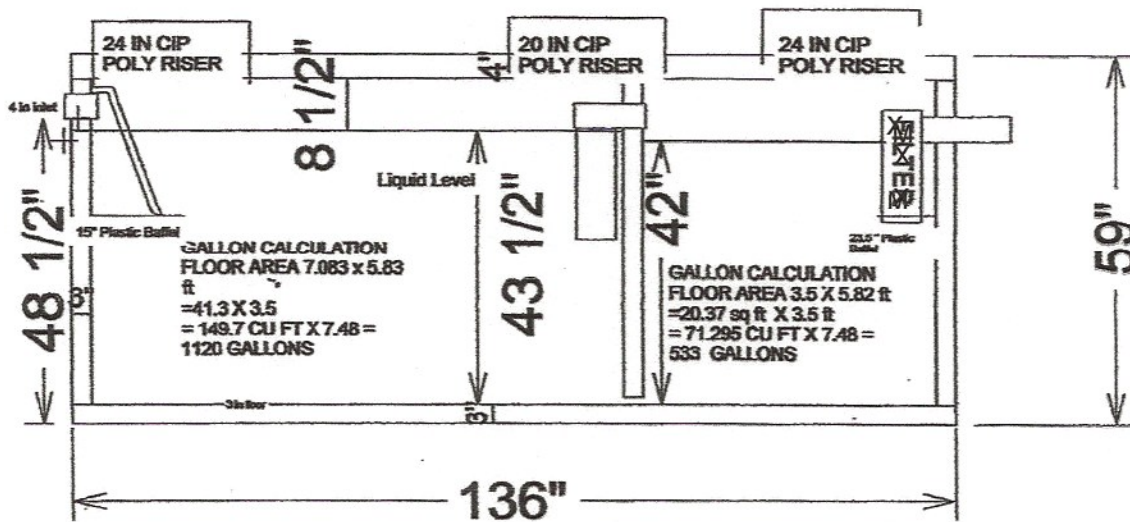
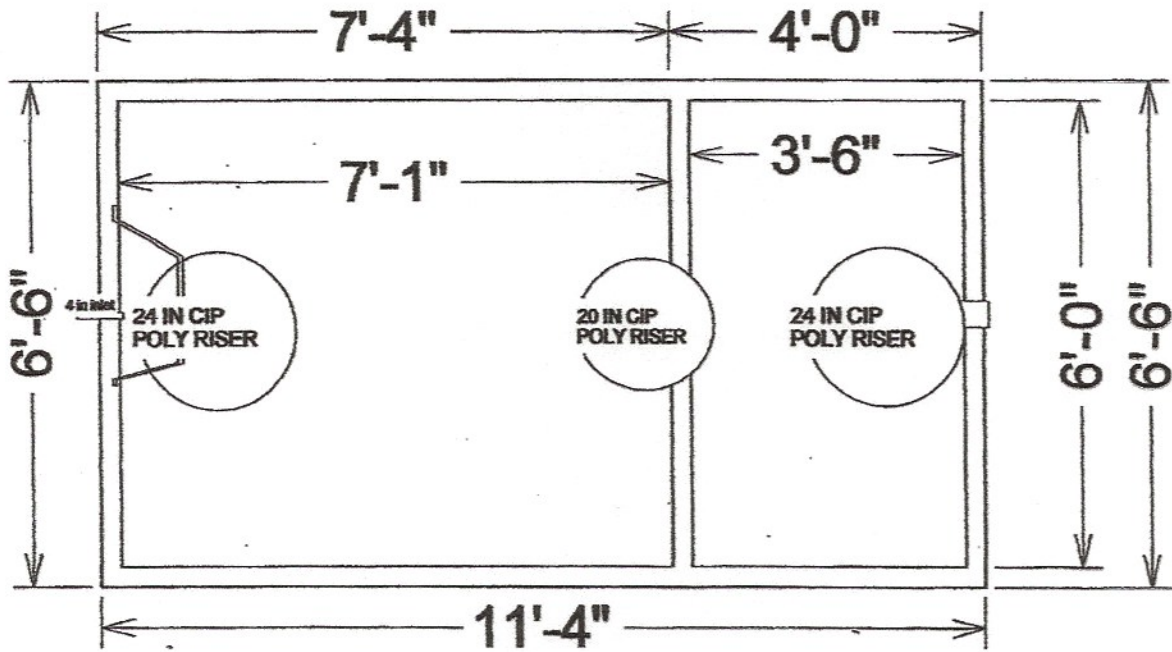


DRAWINGS OWNED BY JACOBSON PRECAST, INC.
 38841 HWY 169, AITKIN, MN 56431
 Do not copy drawings without permission of the owner

34.90 GPI

1650 Gallon 2 Compartment Septic Tank

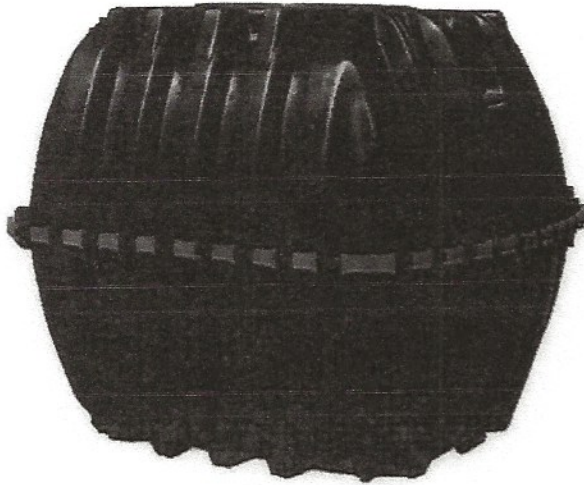
TOP VIEW



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

SIDE VIEW

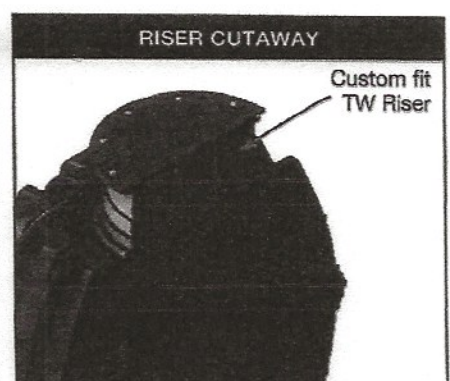
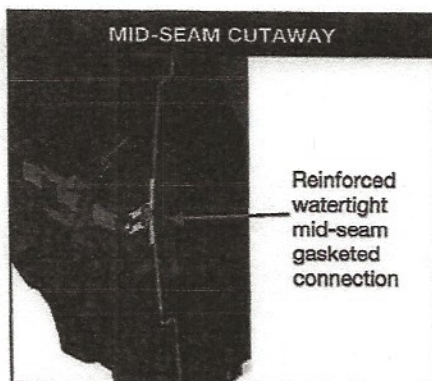
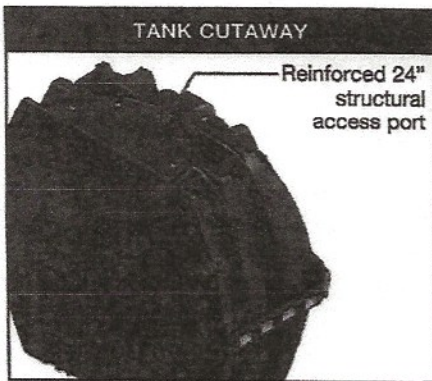
Drawings Owned BY Jacobson Precast, Inc.
 36641 HWY 169, Aitkin, Mn 56431



The Infiltrator IM-540 is a lightweight strong and durable septic/pump tank. This watertight tank design is offered with Infiltrator's line of custom-fit risers and heavy-duty lids. Infiltrator injection molded tanks provide a revolutionary improvement in plastic tank design, offering long-term exceptional strength and watertightness.

Features & Benefits

- Strong injection molded polypropylene construction
- Lightweight plastic construction and inboard lifting lugs allow for easy delivery and handling
- Integral heavy-duty green lids that interconnect with TW™ risers and pipe riser solutions
- Structurally reinforced access ports eliminate distortion during installation and pump-outs
- Reinforced structural ribbing offers additional strength
- Can be installed with 6" to 48" of cover
- Can be pumped dry during pump-outs
- Suitable for use as a pump tank or rainwater (non-potable) tank
- No special installation, backfill or water filling procedures are required

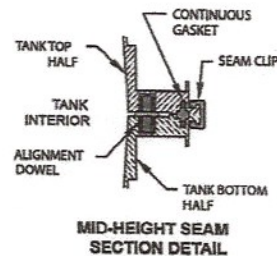
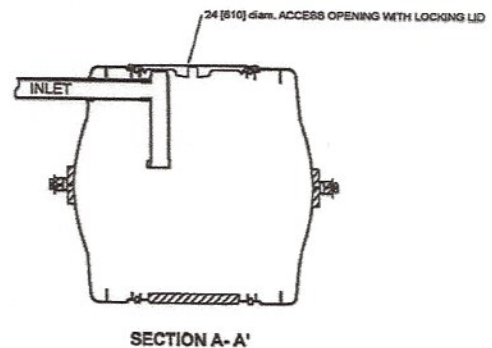
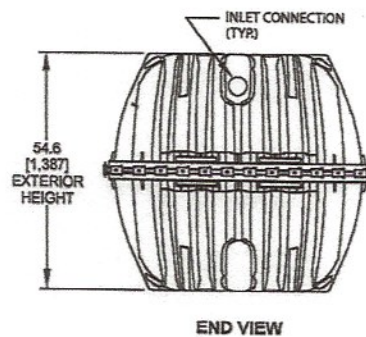
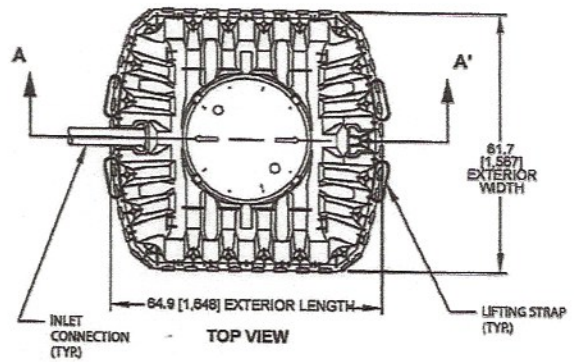


Protecting the Environment with Innovative Wastewater Treatment Solutions

IM-540 General Specifications and Illustrations

The IM-540 is an injection molded two piece mid-seam plastic tank. The IM-540 injection molded plastic design allows for a mid-seam joint that has precise dimensions for accepting an engineered EPDM gasket. Infiltrator's gasket design utilizes technology from the water industry to deliver proven means of maintaining a watertight seal. The two-piece design is permanently fastened using a series of non-corrosive plastic alignment dowels and locking seam clips. The IM-540 is assembled and sold through a network of certified Infiltrator distributors.

IM-540	
Total Capacity	552 gal (2090 L)
Length	64.9" (1648 mm)
Width	61.7" (1567 mm)
Height	54.6" (1387 mm)
Maximum Burial Depth	48" (1219 mm)
Minimum Burial Depth	6" (152 mm)
Maximum Pipe Diameter	4" (100 mm)
Weight	169 lbs (77 kg)



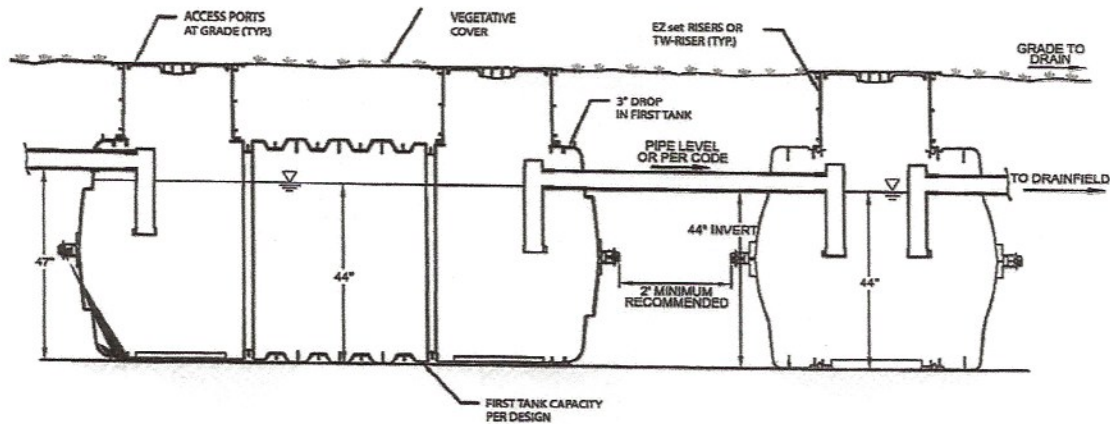
INFILTRATOR®
water technologies

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

U.S. Patents: 4,769,861; 5,017,041; 5,156,488; 5,336,017; 5,401,118; 5,401,459; 5,511,903; 5,716,183; 5,888,778; 5,899,844 Canadian Patents: 1,329,958; 2,004,564 Other patents pending. Infiltrator, Equalizer, Quick4, and SideWinder are registered trademarks of Infiltrator Water Technologies. Infiltrator is a registered trademark in France. Infiltrator Water Technologies is a registered trademark in Mexico. Contour, MicroLeaching, PolyTuff, ChamberSpacer, MultiPort, PosiLock, QuickCut, QuickPlay, SnapLock and StraightLock are trademarks of Infiltrator Water Technologies. PolyLok is a trademark of PolyLok, inc. TUF-TITE is a registered trademark of TUF-TITE, INC. Ultra-Rib is a trademark of IPEX Inc.
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Contact Infiltrator Water Technologies' Technical Services Department for assistance at 1-800-221-4436

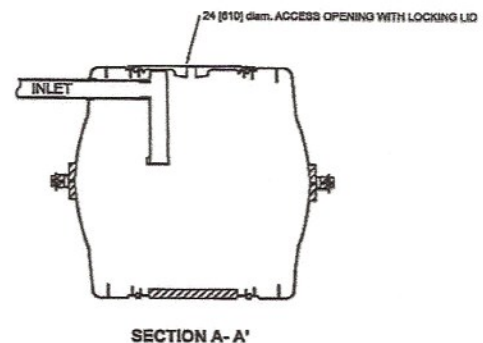
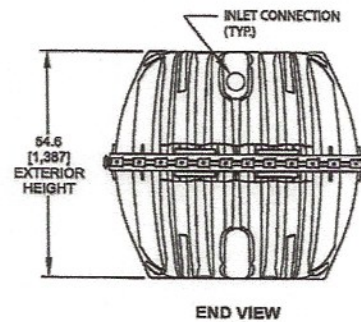
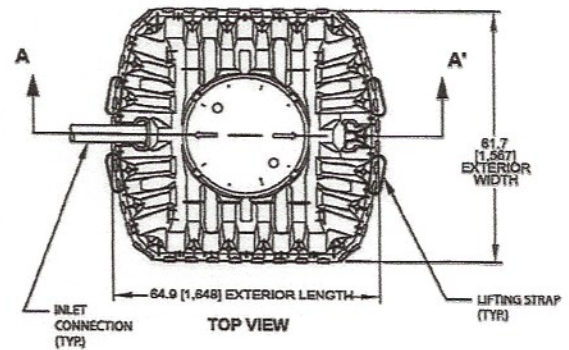
IM11 0813



The IM-540 is an injection molded two piece mid-seam plastic tank. The injection molded plastic design allows for a mid-seam joint that has precise dimensions for accepting an engineered EPDM gasket. Infiltrator's gasket design utilizes technology from the water industry to deliver proven means of maintaining a watertight seal. The two-piece design is permanently fastened using a series of non-corrosive plastic alignment dowels and locking seam clips. The IM-540 is assembled and sold through a network of certified Infiltrator distributors.

Must be backfilled and installed in accordance with Infiltrator Water Technologies, Infiltrator IM-Series Septic Tank General Installation Instructions and for shallow ground water conditions reference the Infiltrator IM-Series Tank Buoyancy Control Guidance.

Please visit www.infiltratorwater.com/images/pdf/ManualsGuides/TANK01.pdf for the latest information.



IM-540	
Working Capacity	475 gal (1799 L)
Total Capacity	552 gal (2089 L)
Airspace	16.2%
Length	64.9" (1648 mm)
Width	61.7" (1567 mm)
Height	54.6" (1387 mm)
Liquid Level	44" (1118 mm)
Compartments	1
Maximum Burial Depth	48" (1219 mm)
Minimum Burial Depth	6" (152 mm)
Maximum Pipe Diameter	4" (100 mm)
Weight	169 lbs (77 kg)



4 Business Park Road
P.O. Box 788
Old Saybrook, CT 06475
860-577-7000 • Fax 860-577-7001
1-800-221-4436
www.infiltratorwater.com

U.S. Patents: 4,759,661; 5,017,041; 5,156,488; 5,336,017; 5,401,118; 5,401,459; 5,511,903; 5,716,163; 5,588,778; 5,839,844 Canadian Patents: 1,329,959; 2,004,554 Other patents pending. Infiltrator, Equalizer, Quick4, and SideWinder are registered trademarks of Infiltrator Water Technologies. Infiltrator is a registered trademark in France. Infiltrator Water Technologies is a registered trademark in Mexico. Contour, MicroLeaching, PolyTuff, ChamberSpacer, MultiPort, PosiLock, QuickOut, QuickPlay, SnapLock and StraightLock are trademarks of Infiltrator Water Technologies. PolyLok is a trademark of PolyLok, Inc. TUF-TITE is a registered trademark of TUF-TITE, INC. Ultra-Rib is a trademark of IPEX Inc.
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Contact Infiltrator Water Technologies' Technical Services Department for assistance at 1-800-221-4436

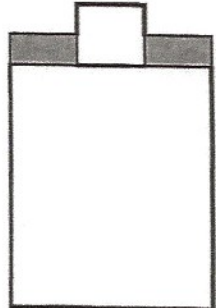
IM19 1116

Tank Buoyancy Sheet

Tank ID. Infiltrator IM-540 Poly Tank

Force of the water surrounding the empty tank = to the water displaced + safety factor.

Water = Lbs. per. Cubic ft. 62.4 Lbs.
 Soil = lbs. per cubic ft. 80.0 Lbs.



G	2.0	Ft.
H	4400	Lbs.
A	27.5	
B	4.5	Ft.
C	169	Lbs.
D	1.5	
E	123.75	
F	7722	Lbs.

Cover ←

Total Downward forces on tank (F + H) I 12122 Lbs.
 Buoyancy forces on tank (F x D) J 11583.0 Lbs.

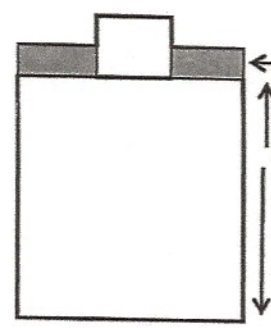
Weight need to be added to tank K -539.0 Lbs. ←

Weight of concrete per cubic ft. 150 Lbs.
 Weight need to be added L 1 Lbs.
 Weight converted to cubic ft. of concrete (L / 150) M 0.0 Cu.Ft.
 Ft of concrete needed to be added to tank. (M / A) N 0.00 Ft.
 Inches of concrete (N x 12") O 0.0 Inches
 Double check weight (A x N X 150) 1 Lbs.

Tank ID. Tank Buoyancy Sheet
Infiltrator IM-540 Poly Tank

Force of the water surrounding the empty tank = to the water displaced + safety factor.

Water = Lbs. per. Cubic ft. 62.4 Lbs.
 Soil = lbs. per cubic ft. 80.0 Lbs.



- ← Depth of soil cover on tank G
- Weight of soil cover H
- Sq. Ft of tank bottom A
- ← Total height of tank B
- Weight of tank C
- Safety Factor (1.2 - 1.5) D
- Cubic Ft. of tank volume (A x B) E
- Weight of Water displaced (E x 6 F

2.5	Ft.	<i>Cover</i> ←
5500	Lbs.	
27.5		
4.5	Ft.	
169	Lbs.	
1.5		
123.75		
7722	Lbs.	

Total Downward forces on tank (F + H) I
 Buoyancy forces on tank (F x D) J

13222	Lbs.
11583.0	Lbs.

Weight need to be added to tank K

-1639.0	Lbs.	←
---------	------	---

Weight of concrete per cubic ft. 150 Lbs.
 Weight need to be added L
 Weight converted to cubic ft. of concrete (L / 150) M
 Ft of concrete needed to be added to tank. (M / A) N
 Inches of concrete (N x 12") O
 Double check weight (A x N X 150)

1	Lbs.
0.0	Cu.Ft.
0.00	Ft.
0.0	Inches
1	Lbs.



Minnesota
Department of
Health

Minnesota Well Index

General Information

Unique Well ID:	758689	Well Name:	WOLDEN, WILLIAM	County:	Aitkin	Aquifer:	Quat. buried artes. aquifer
Well Elevation (msl in feet):	1266	Drilled Depth (ft):	55	Well Completed (ft):	55	Date Drilled:	10/10/2007
Township:	46	Range:	27	Dir:	W	Section:	23
Subsection:	DDCAAB	Use:	domestic	Well Status:	Active	Depth To Bedrock:	
Driller:	Northland Drilling, Inc.	Entry Date:		Update Date:	09/12/2017		

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	10	BROWN	SFT-MED	CLAY		clay-brown
SAND	10	14	BROWN	SOFT	SAND		sand-brown
CLAY	14	19	BROWN	MEDIUM	CLAY		clay-brown
SAND	19	26	BROWN	SOFT	SAND		sand-brown
CLAY	26	44	GRAY	MEDIUM	CLAY		clay-gray
SAND/ROCKS	44	55	BROWN	SOFT	SAND		sand +larger-brown



Detailed Parcel Report

Parcel Number: 07-0-046103

General Information

Lake lot.

Township/City: FARM ISLAND TWP
 Taxpayer Name: RUSKELL, TERRY ETAL
 Taxpayer Address: 14721 SOUTH POINT CURVE
 BURNSVILLE MN 55306
 Property Address: 41235 300th Ln
 Township: 46 Lake Number: 1017800
 Range: 27 Lake Name: SPIRIT LAKE
 Section: 23 Acres: 1.25
 Green Acres: No School District: 1.00
 Plat:
 Brief Legal Description: THAT PART OF LOT 1 AS IN DOCS 341212 & 341213 (TRACT H)

Tax Information

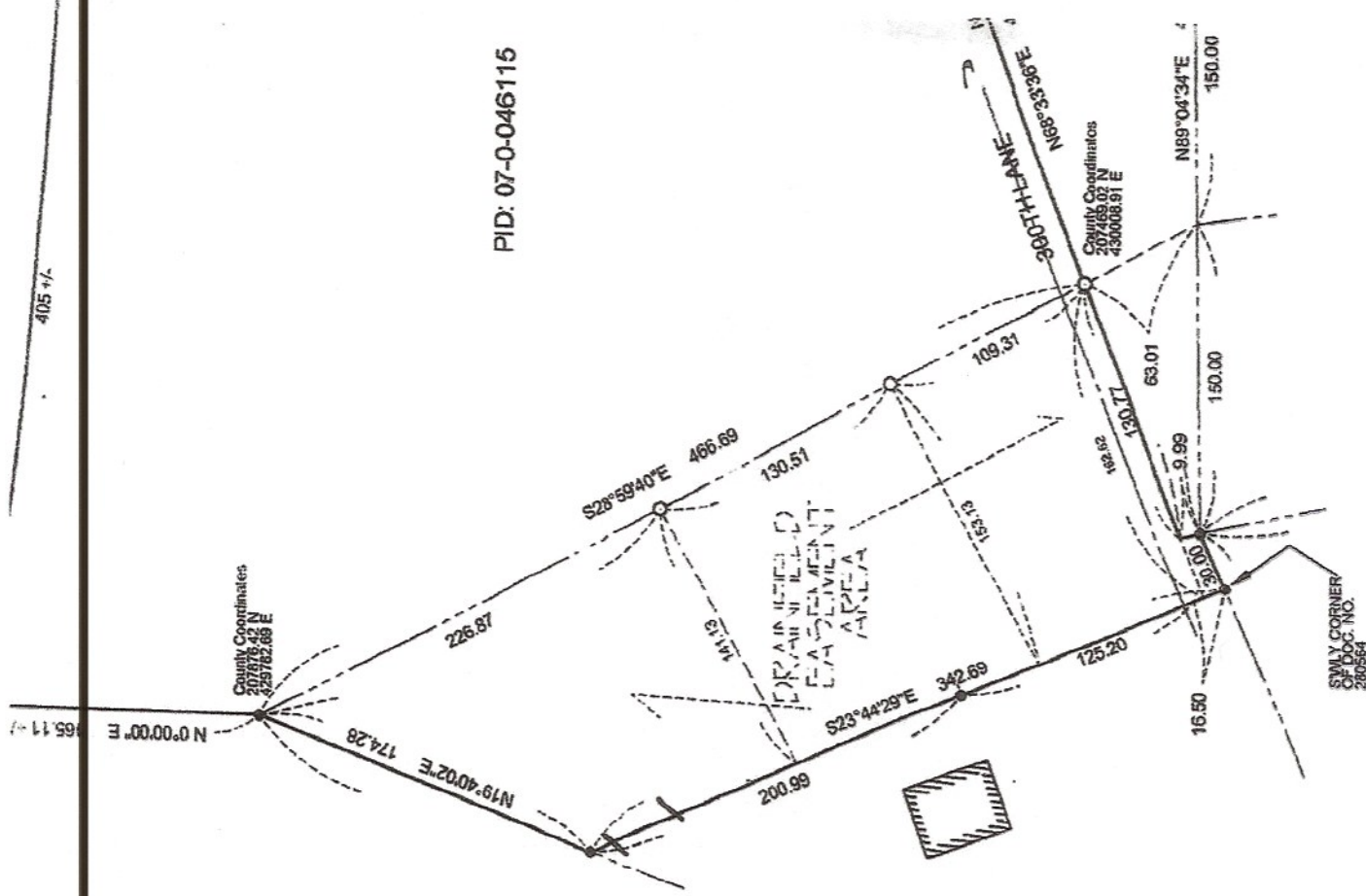
Class Code 1: Non-Comm Seasonal Residential Recreational
 Class Code 2: Unclassified
 Class Code 3: Unclassified
 Homestead: Non Homestead
 Assessment Year: 2019

Estimated Land Value: \$148,300.00
 Estimated Building Value: \$72,800.00
 Estimated Total Value: \$221,100.00
 Prior Year Total Taxable Value: \$217,300.00
 Current Year Net Tax (Specials Not Included): \$1,744.00
 Total Special Assessments: \$0.00
 ** Current Year Balance Not Including Penalty: \$872.00
 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.

PID: 07-0-046115



Certificate of Survey
 Of a part of Govt. Lot 1 of Section 23,
 Township 46, Range 27, Aitkin County,
 Minnesota. (Document No. 280564).

Terry J. Betley
 Land Surveyor
 Aitkin County Abstract Company Building
 112 Third Street Northwest
 Aitkin, Minnesota 56431



Beating Datum is based on Aitkin County Coordinates.
 ● Denotes iron monument established by prior surveys.
 ○ Denotes set iron monument.

I hereby certify that this plan, survey or report was prepared by me or under my direct supervision and that I am a duly licensed land surveyor & abstractor under the laws of the State of Minnesota.

Terry J. Betley
 "electronically produced"

Terry J. Betley, Minnesota Registration No. 15811 & 19
 Date: OCTOBER 13, 2019



Detailed Parcel Report

Parcel Number: 07-0-046115

General Information

Parcel with Exemption area

Township/City: FARM ISLAND TWP
 Taxpayer Name: MARKS, SANDRA J TRUST
 Taxpayer Address: 27212 W TWIN LAKE DR
 PEQUOT LAKES MN 56472
 Property Address:
 Township: 46 Lake Number: 1917800
 Range: 27 Lake Name: SPIRIT - BACK LOT
 Section: 23 Acres: 5.20
 Green Acres: No School District: 1.00
 Plat:
 Brief Legal Description: 5.2 AC OF LOT 1 AS IN DOC# 280564

Tax Information

Class Code 1: Rural Vacant Land
 Class Code 2: Unclassified
 Class Code 3: Unclassified
 Homestead: Non Homestead
 Assessment Year: 2019

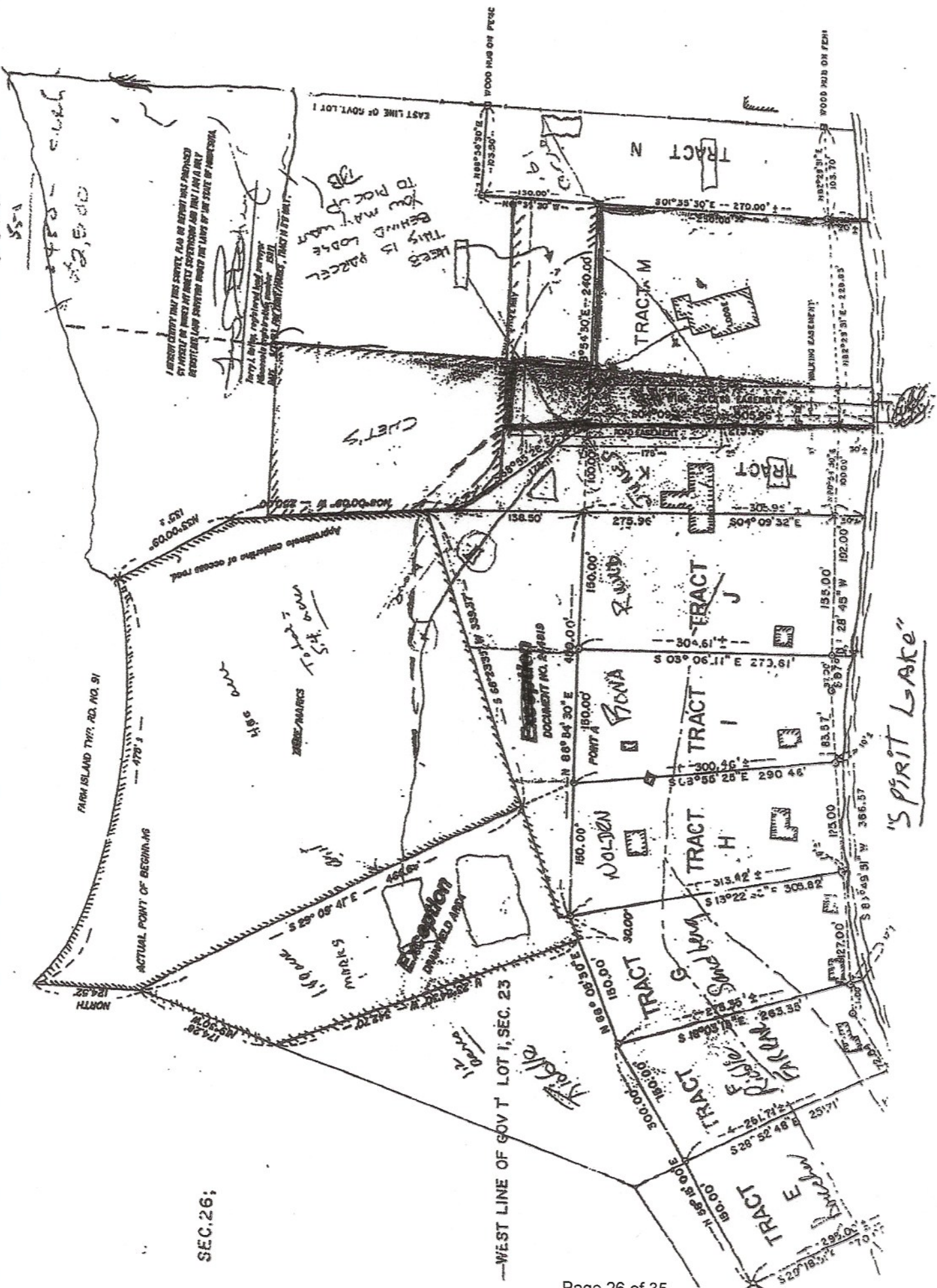
Estimated Land Value: \$23,600.00
 Estimated Building Value: \$0.00
 Estimated Total Value: \$23,600.00

Prior Year Total Taxable Value: \$24,300.00
 Current Year Net Tax (Specials Not Included): \$154.00
 Total Special Assessments: \$0.00
 ** Current Year Balance Not Including Penalty: \$0.00
 Delinquent Taxes: No

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

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

3000
55-
4480 - 5.6.82
42,500.00



SEC. 26;

WEST LINE OF GOV'T LOT I, SEC. 23

No delinquent taxes and transfer entered; Certificate of Real Estate Value (X) filed () not required
 Certificate of Real Estate Value No. 19801
(Noted on 7), 19 93

Celine Rafter
 County Auditor

by Maria Burman
 Deputy

280564

FILED OCT 7 1993 AT 11AM

Everett Davis, County Recorder

STATE DEED TAX DUE HEREON: \$ 16.50
 Date: September 20, 19 93

(reserved for recording data)

FOR VALUABLE CONSIDERATION, James W. Ziske, a single person and
Jerry J. Ziske, a single person (marital status), Grantor (s),
 hereby convey (s) and warrant (s) to Herbert P. Marks and Sandra J. Marks,
 tenants, real property in Aitkin County, Minnesota, described as follows:

SEE EXHIBIT "A" ATTACHED HERETO.

→ The Seller certifies that the Seller does not know of any wells on the described real property".

(if more space is needed, continue on back)

together with all hereditaments and appurtenances belonging thereto, subject to the following exceptions:

easements, restrictions and reservations of record, if any.

AITKIN COUNTY DEED TAX
 No. 39 Date 10/7/93
\$16.50 Dollars Paid:
Debra Nelson
 County Treasurer

By _____ Deputy

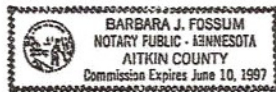
James W. Ziske
 James W. Ziske

Jerry J. Ziske
 Jerry J. Ziske

STATE OF MINNESOTA }
 COUNTY OF AITKIN } ss.

The foregoing instrument was acknowledged before me this 20th day of September, 19 93,
 by James W. Ziske, a single person and Jerry J. Ziske, a single
person, Grantor (s).

NOTARIAL STAMP OR SEAL (OR OTHER TITLE OR RANK)



Barbara J. Fossum
 SIGNATURE OF PERSON TAKING ACKNOWLEDGMENT

Tax Statements for the real property described in this instrument should be sent to (include name and address of Grantee):

THIS INSTRUMENT WAS DRAFTED BY (NAME AND ADDRESS):

James R. Stuart
 Attorney at Law
 16 Second Street NE
 Aitkin, MN 56431
 (218) 927-6571

Mr. and Mrs. Herbert P. Marks
 3817 South Brunswick Avenue
 St. Louis Park, MN 55416

EXHIBIT A

That part of Government Lot 1 of Section 23, Township 46, Range 27, Aitkin County, Minnesota to be described as follows:

Commencing at the northwest corner of Government Lot 1 of Section 26, Township 46, Range 27; thence South 00 degrees 03 minutes 52 seconds East on an assigned bearing along the West line of said Government Lot 1 of said Section 26 a distance of 382.00 feet; thence North 89 degrees 56 minutes 08 seconds East 200.00 feet; thence North 79 degrees 19 minutes 08 seconds East 406.00 feet; thence North 36 degrees 49 minutes 08 seconds East 205.70 feet; thence North 29 degrees 57 minutes 08 seconds East 300.00 feet; thence North 69 degrees 46 minutes 54 seconds East 300.00 feet; thence North 30 degrees 32 minutes 01 seconds East 173.47 feet; thence North 22 degrees 01 minutes 33 seconds East 192.09 feet; thence North 58 degrees 15 minutes East 300.00 feet; thence North 66 degrees 05 minutes 30 seconds East 120.00 feet; thence North 23 degrees 54 minutes 30 seconds West 342.70 feet; thence North 19 degrees 30 minutes East 174.28 feet to the actual point of beginning of the following tract of land to be described; thence South 19 degrees 30 minutes West 174.28 feet; thence South 23 degrees 54 minutes 30 seconds East 342.70 feet; thence North 66 degrees 05 minutes 30 seconds East 30.00 feet; thence North 88 degrees 54 minutes 30 seconds East 450.00 feet; thence North 04 degrees 09 minutes 32 seconds West 138.50 feet; thence North 08 degrees 00 minutes 09 seconds West 250.00 feet; thence North 33 degrees 00 minutes 09 seconds West 135 feet, more or less, to the southerly right of way line of Farm Island Township Road No. 91; thence Westerly along said right of way line to its intersection with a line bearing North from the actual point of beginning; thence South 124.52 feet, to the actual point of beginning. Excepting any part thereof as described in Document No. 244819.

Containing 5.2 acres, more or less.

Subject to easements, reservations, restrictions, ordinances and septic system agreements, easements now of record.

ZISKE:TRY

*Herbert P. Machin
7817 L. Brunowick Ave.
St. Louis Park, Minnesota*

10-79

RECORDED
TRACT INDEX
GRANTOR
GRANTEE
COMPARED

OFFICE OF COUNTY RECORDER
AITKIN COUNTY, MINN.
 WELL CERTIFICATE RECEIVED
 WELL CERTIFICATE NOT REQUIRED

COUNTY RECORDER
AITKIN COUNTY, MINNESOTA

FILED

OCT 7 '93 99 M

Lucretia J. Davis
As Doc. No. 280564

Certificate of Survey
 Of a part of Govt. Lot 1 of Section 23,
 Township 46, Range 27, Aitkin County,
 Minnesota. (Document No. 280564).

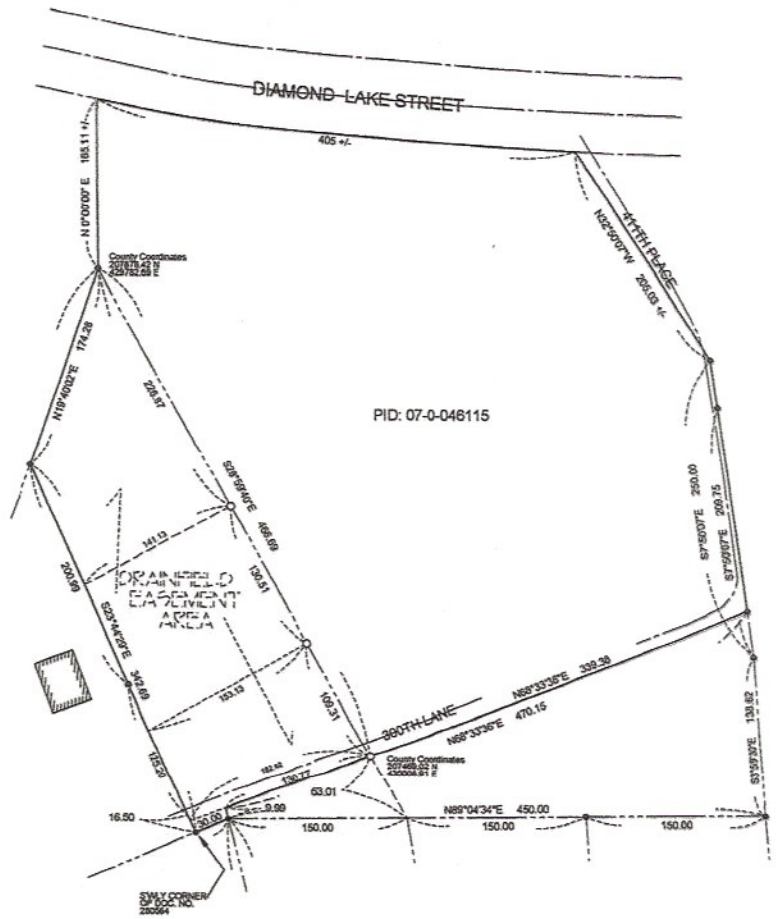
Terry J. Betley
 Licensed Surveyor
 Aitkin County Abstract Company Building
 112 Third Street Northeast
 Aitkin, Minnesota 56431

Graphic Scale: 1 inch = 75 feet
 0 25 50 100 150 200
 Bearing Datum is based on Aitkin County Coordinates.
 ☉ Denotes iron monument established by prior surveys.
 ○ Denotes cast iron monument.

I hereby certify that this plan, survey or report was
 prepared by me or under my direct supervision and that
 I am a duly licensed land surveyor & practitioner under the
 laws of the State of Minnesota.

Terry J. Betley
 "Indemnified Professional"

Terry J. Betley, Minnesota Registration No. 15811 & 19
 Date: OCTOBER 13, 2019

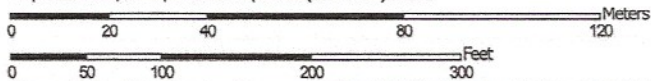


Soil Map—Aitkin County, Minnesota
(Ruskell / Wendland)



Soil Map may not be valid at this scale.

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



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



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
502	Dusler silt loam	0.2	79.9%
504B	Duluth fine sandy loam, 1 to 6 percent slopes	0.0	20.1%
Totals for Area of Interest		0.2	100.0%

Aitkin County, Minnesota

502—Dusler silt loam

Map Unit Setting

National map unit symbol: gjh6
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: Prime farmland if drained

Map Unit Composition

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

Description of Dusler

Setting

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

Typical profile

A - 0 to 5 inches: silt loam
Eg, 2B/E - 5 to 21 inches: fine sandy loam
2Bt1, 2Bt2 - 21 to 50 inches: clay loam
2C - 50 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat):
Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Forage suitability group: Level Swale, Acid (G090AN005MN)
Hydric soil rating: No

Minor Components

Duluth and similar soils

Percent of map unit: 7 percent
Hydric soil rating: No

Blackhoof and similar soils

Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

Mahtowa and similar soils

Percent of map unit: 4 percent
Landform: Swales
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Aitkin County, Minnesota
Survey Area Data: Version 20, Sep 16, 2019

Aitkin County, Minnesota

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

Map Unit Setting

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

Map Unit Composition

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

Description of Duluth

Setting

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

Typical profile

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

Properties and qualities

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

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Forage suitability group: Sloping Upland, Acid (G090AN006MN)
Hydric soil rating: No

Minor Components

Mahtowa and similar soils

Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: Yes

Blackhoof and similar soils

Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: Yes

Rifle and similar soils

Percent of map unit: 3 percent
Landform: Bogs
Hydric soil rating: Yes

Cromwell and similar soils

Percent of map unit: 2 percent
Hydric soil rating: No

Dusler and similar soils

Percent of map unit: 2 percent
Hydric soil rating: No

Cutaway and similar soils

Percent of map unit: 2 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Aitkin County, Minnesota
Survey Area Data: Version 20, Sep 16, 2019

Subsurface Sewage Treatment System Management Plan

Property Owner: Terry Ruskell Phone: 52-212-8916 Date: 11/15/2019
Mailing Address: 14721 South Point Curve City: Burnsville MN Zip: 55306
Site Address: 41235 300th Ln. City: Aitkin MN Zip: 56431

This management plan will identify the operation and maintenance activities necessary to ensure long-term performance of your septic system. Some of these activities must be performed by you, the homeowner. Other tasks must be performed by a licensed septic service provider.

System Designer: check every 36 months.
Local Government: check every _____ months.
State Requirement: check every 36 months.

My System needs to be checked every 36 months.

State requirements are based on MN Rules Chapter 7080.2450, Subp. 2 & 3)

Homeowner Management Tasks

Leaks – Check (look, listen) for leaks in toilets and dripping faucets. Repair leaks promptly.

Surfacing sewage – Regularly check for wet or spongy soil around your soil treatment area.

Owner ---> *Effluent filter* – Inspect and clean twice a year or more.

Owner ---> *Alarms* – Alarm signals when there is a problem. Contact a service provider any time an alarm signals.

Event counter or water meter – Record your water use.

-recommend meter readings be conducted (circle one: DAILY WEEKLY MONTHLY)

Professional Management Tasks

- Check to make sure tank is not leaking
- Check and clean the in-tank effluent filter
- Check the sludge/scum layer levels in all septic tanks
- Recommend if tank should be pumped
- Check inlet and outlet baffles
- Check the drainfield effluent levels in the rock layer
- Check the pump and alarm system functions
- Check wiring for corrosion and function
- Check dissolved oxygen and effluent temperature in tank
- Provide homeowner with list of results and any action to be taken
- Flush and clean laterals if cleanouts exist

"I understand it is my responsibility to properly operate and maintain the sewage treatment system on this property, utilizing the Management Plan. If requirements in the Management Plan are not met, I will promptly notify the permitting authority and take necessary corrective actions. If I have a new system, I agree to adequately protect the reserve area for future use as a soil treatment system."

Property Owner Signature: _____ Date: _____

Designer Signature: Jeff Brummer Date: 11/15/2019

See Reverse Side for Management Log

Maintenance Log

Activity	Date Accomplished
Check frequently:	
Leaks: check for plumbing leaks	
Soil treatment area check for surfacing	
Lint filter: check, clean if needed	
Effluent screen: if owner-maintained	
Water usage rate (monitor frequency _____)	
Check annually:	
Caps: inspect, replace if needed	
Sludge & Scum/Pump	
Inlet & Outlet baffles	
Drainfield effluent leaks	
Pump, alarm, wiring	
Flush & clean laterals if cleanouts exists	
Other: _____	
Other: _____	

Notes: Check & Clean Effluent filter at least twice a year. Check all alarms & pumps at least once a year.

Pump septic & pump tanks at least once every three years.

Mow Drainfield area at least once a year to keep trees and brush from growing in area.

No Traffic on drainfields area, No Snowmobiles, No ATV's, No Parking.

Mitigation/corrective action plan: _____
