07-0-022001 2023 *Press Submit/Enter to continue or enter new parcel/tax year.*

INQPCL-1 Production 8/22/22 07:58:40

GIS Parcel: 07-0-022001 Account: 4842 Asmt year: 2022 Tax year: 2023 Type: RE

Primary owner: 26237 KELSEY, KATHLEEN M
Taxpayer: 26237 KELSEY, KATHLEEN M
Undeliverable tax address: N Dept:
Ref. parcel:
Lake #/Name: 1098900 RIPPLE RIVER
Physical address: 41090 328th Ln
AITKIN 56431
User defined:

Escrow:
FALCO: 1 F.O. Notes:
Hold tax statement: Emergency#:
Lease type: Surveyed:
Commissioner dist: 2 UDI: 100.00%
MH court number: Billing: P
TIF district:
TIF knock down date:

Unique Taxing Area

UTA-Township/City: 7 FARM ISLAND TWP
School district: 1 AITKIN
State UTA: 8 1 00

AMBU **** **** ****
00 00 00 00
Unit:

Property Description

Desc: W 500 FT OF E 900 FT OF SE NE S OF RIVER
version 1

Acres: 12.25 Lot: Block:
Plat/Description:
Section/Twp/Range: 11 46.0 27

FIELD EVALUATION SHEET Type 3 System

PRELIMINARY EVALUATION DATE Aug 24 2022, FIELD EVALUATION DATE Aug. 24, 2022
PROPERTY OWNER: Kathleen Kelsey (Seller) Seth Jacobs (Buyer) PHONE (218-429-2241) X 218-851-6648
ADDRESS: 41090-328th Lane CITY,STATE,ZIP: Aitkin, Mn. 56431
LEGAL DESCRIPTION:
PIN# 07-0-022001 SEC 11 T 46 R 27 TWP NAME Farm Island
FIRE# LAKE/RIVER Ripple River LAKE CLASS OHWL FT.

DESCRIPTION OF SOIL TREATMENT AREAS

	AREA #1	AREA #2
DISTURBED AREAS	YES NO X	YES NO
COMPACTED AREAS	YES NO X	YES NO
FLOODING	YES NO X	YES NO
RUN ON POTENTIAL	YES NO X	YES NO
SLOPE %	6	
DIRECTION OF SLOPE	S-N	
LANDSCAPE POSITION	E-W	
VEGETATION TYPES	Grass	

REFERENCE BM ELEV. 100 FT.
REFERENCE BM DESCRIPTION
Top of existing tank lid

DEPTH TO STANDING WATER OR MOTTLED SOIL: BORING# 1 9", 1A 8", 2 ,2A

BOTTOM ELEVATION--FIRST TRENCH OR BOTTOM OF ROCK BED: #1 106 FT., #2 FT.

SOIL SIZING FACTOR: SITE # 1 2.67, SITE #2

CONSTRUCTION RELATED ISSUES: Soils must be dry before starting must have an operating permit for a Type 3 system. Line from Tank to mound must be pressure tested - approx. 30' from well to pump line

LIC# L2132 SITE EVALUATOR SIGNATURE: Tom O'Neil

SITE EVALUATOR NAME: Tom O'Neil TELEPHONE# 218-927-6070

LUG REVIEW

DATE 8-25-22

Comments:

SOIL BORING LOGS ON REVERSE SIDE

Form des 2/20/98

Type 3 System

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-4	Silty loam	10yr 3/2
4-10	Clay loam	7.5yr 3/3
	Mottles at 9"	

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-4	Silty loam	10yr 3/2
4-10	Clay loam	7.5yr 3/3
	Mottles at 8"	

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

MOUND DESIGN WORK SHEET (For Flows up to 1200 gpd)

A. Average Design FLOW

Estimated 450 gpd *(see figure A-1)*
or measured _____ x 1.5 (safety *factor*) = _____ gpd

A-1: Estimated Sewage Flows in Gallons per Day				
number of bedrooms	Class I	Class II	Class III	Class IV
2	300	225	180	60%
3	450	300	218	of the
4	600	375	256	values
5	750	450	294	in the
6	900	525	332	Class I,
7	1050	600	370	II, or III
8	1200	675	408	columns.

B. SEPTIC TANK Capacity

Existing Tank is good. add a 1650 to the system

1,000 gallons *(see figure C-1)*

C-1: Septic Tank Capacities (in gallons)			
Number of Bedrooms	Minimum Liquid Capacity	Liquid capacity with garbage disposal	Liquid capacity with disposal& lift inside
2 or less	750	1125	1500
3 or 4	1000	1500	2000
5 or 6	1500	2250	3000
7, 8 or 9	2000	3000	4000

C. SOILS *(refer to site evaluation)*

1. Depth to restricting layer = 8" ~~feet~~
2. Depth of percolation tests = _____ feet
3. Texture Clay Loam
   Percolation rate 40-60 mpi
4. Soil loading rate .45 gpd/sqft *(see figure D-33)*
5. Percent land slope 6 %

D. ROCK LAYER DIMENSIONS

1. Multiply average design flow (A) by 0.83 to obtain required rock layer area.
   450 gpd x 0.83 sqft/gpd = 373.5 sqft
2. Determine rock layer width = 0.83 sqft/gpd x linear Loading Rate (LLR)
   0.83 sqft/gpd x _____ gpd/sqft = 10 ft
3. Length of rock layer = area ÷ width =
   375 sqft (D1) ÷ 10 ft (D2) = 38 ft

Mound LLR	
< 120 MPI	≤12
≥ 120 MPI	≤6

E. ROCK VOLUME

1. Multiply rock area (D1) by rock depth of 1 ft to get cubic feet of rock
   380 sqft x 1 ft = 380 cuft
2. Divide cuft by 27 cuft/cuyd to get cubic yards
   380 cuft ÷ 27 cuyd/cuft = 14 cuyd
3. Multiply cubic yards by 1.4 to get weight of rock in tons
   14 cuyd x 1.4 ton/cuyd = 20 tons

F. SEWAGE ABSORPTION WIDTH

Absorption width equals absorption ratio (See Figure D-33) times rock layer width (D2)

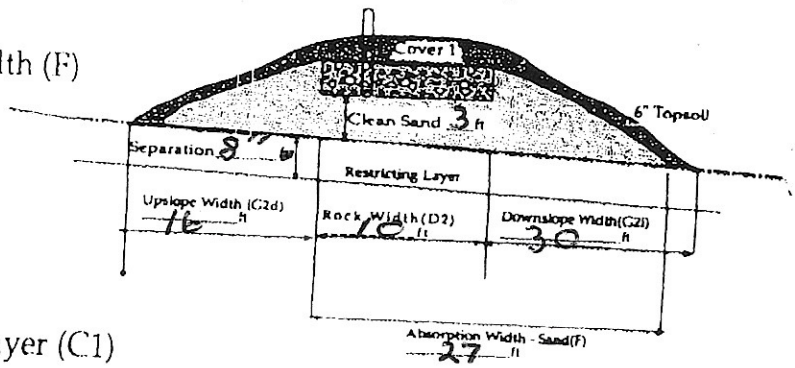
2.67 x 10 ft = 27 ft

D-33: Absorption Width Sizing Table			
Percolation Rate in Minutes per Inch (MPI)	Soil Texture	Loading Rate Gallons per day per square foot	Absorption Ratio
Faster than 5	Coarse Sand Medium Sand Loamy Sand Fine Sand	1.20	1.00
6 to 15	Sandy Loam	0.79	1.50
16 to 30	Loam	0.60	2.00
31 to 45	Silt Loam Silt	0.50	2.40
46 to 60	Sandy Clay Loam Silty Clay Loam Clay Loam	0.45	2.67
61 to 120	Silty Clay Sandy Clay Clay	0.24	5.00
Slower than 120*			

*System designed for these soils must be other or performance

G. MOUND SLOPE WIDTH & LENGTH
(landslope greater than 1%)

Landslope > 1% slope



1. Downslope absorption width = absorption width (F) minus rock layer width (D2)

27 ft - 10 ft = 17 ft

2. Calculate mound size

UPSLOPE

a. Depth of clean sand fill at upslope edge of rock layer = 3 ft minus the distance to restricting layer (C1)

3 ft - 0 ft = 3 ft

b. Mound height at the upslope edge of rock layer = depth of clean sand for separation (G2a) at upslope edge plus depth of rock layer (1 ft) plus depth of cover (1 ft)

3 ft + 1ft + 1ft = 5 ft

c. Upslope berm multiplier based on land slope

3.23 *(see figure D-34)*

d. Upslope width = berm multiplier (G2c) times upslope mound height (G2b):

3.23 x 5 ft = 16 ft

DOWNSLOPE

e. Drop in elevation = rock layer width (D2) times percent landslope (C5) ÷ 100

10 ft x 6 % ÷ 100 = .6 ft

f. Downslope mound height = depth of clean sand for slope difference (G2e) at downslope rock edge plus the mound height at the upslope edge of rock layer (G2b)

.6 ft + 5 ft = 5.6 ft

g. Downslope berm multiplier based on percent land slop

5.26 *(see figure D-34)*

h. Downslope width = downslope multiplier (G2g) times downslope mound height (G2f)

5.26 x 5.6 ft = 30 ft

Select the greater of G1 and G2h as the downslope width: 30 ft

Total mound width is the sum of upslope width (G2d) width plus rock layer width (D2) plus downslope width (G2i)

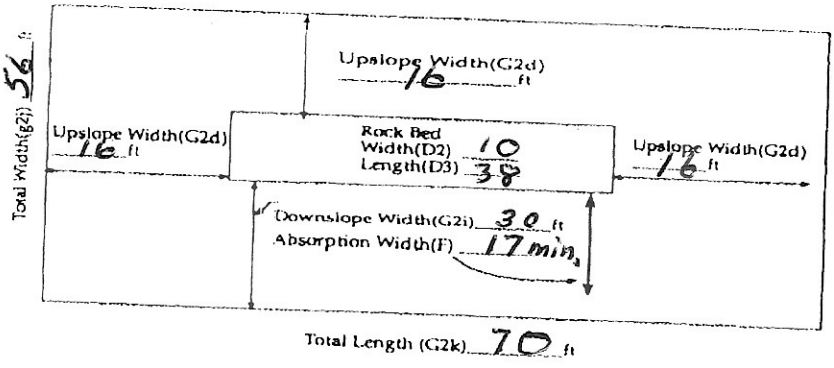
16 ft + 10 ft + 30 ft = 56 ft

Total mound length is the sum of upslope width (G2d) plus rock layer length (D3) plus upslope width (G2d)

16ft + 38 ft + 16 ft = 70 feet

D-34: SLOPE MULTIPLIER TABLE

Land Slope, in %	UPSLOPE multipliers for various slope ratios						DOWNSLOPE multipliers for various slope ratios				
	3:1	4:1	5:1	6:1	7:1	8:1	3:1	4:1	5:1	6:1	7:1
0	3.0	4.0	5.0	6.0	7.0	8.0	3.0	4.0	5.0	6.0	7.0
1	2.91	3.85	4.76	5.66	6.54	7.41	3.09	4.17	5.26	6.38	7.53
2	2.83	3.70	4.58	5.36	6.14	6.90	3.19	4.35	5.56	6.82	8.14
3	2.75	3.57	4.35	5.08	5.79	6.45	3.30	4.54	5.88	7.32	8.86
4	2.68	3.45	4.17	4.84	5.46	6.06	3.41	4.76	6.25	7.89	9.72
5	2.61	3.33	4.00	4.62	5.19	5.71	3.53	5.00	6.67	8.57	10.77
6	2.54	3.23	3.85	4.41	4.93	5.41	3.66	5.26	7.14	9.38	12.07
7	2.48	3.12	3.70	4.23	4.70	5.13	3.80	5.56	7.69	10.34	13.73
8	2.42	3.03	3.57	4.05	4.49	4.88	3.95	5.88	8.33	11.54	15.91
9	2.36	2.94	3.45	3.90	4.30	4.65	4.11	6.25	9.09	13.04	18.92
10	2.31	2.86	3.33	3.75	4.12	4.44	4.29	6.67	10.00	15.00	23.33
11	2.26	2.78	3.23	3.61	3.95	4.26	4.48	7.14	11.11	17.65	30.43
12	2.21	2.70	3.12	3.49	3.80	4.08	4.69	7.69	12.50	21.43	43.75



Final Dimensions:

56 x 70

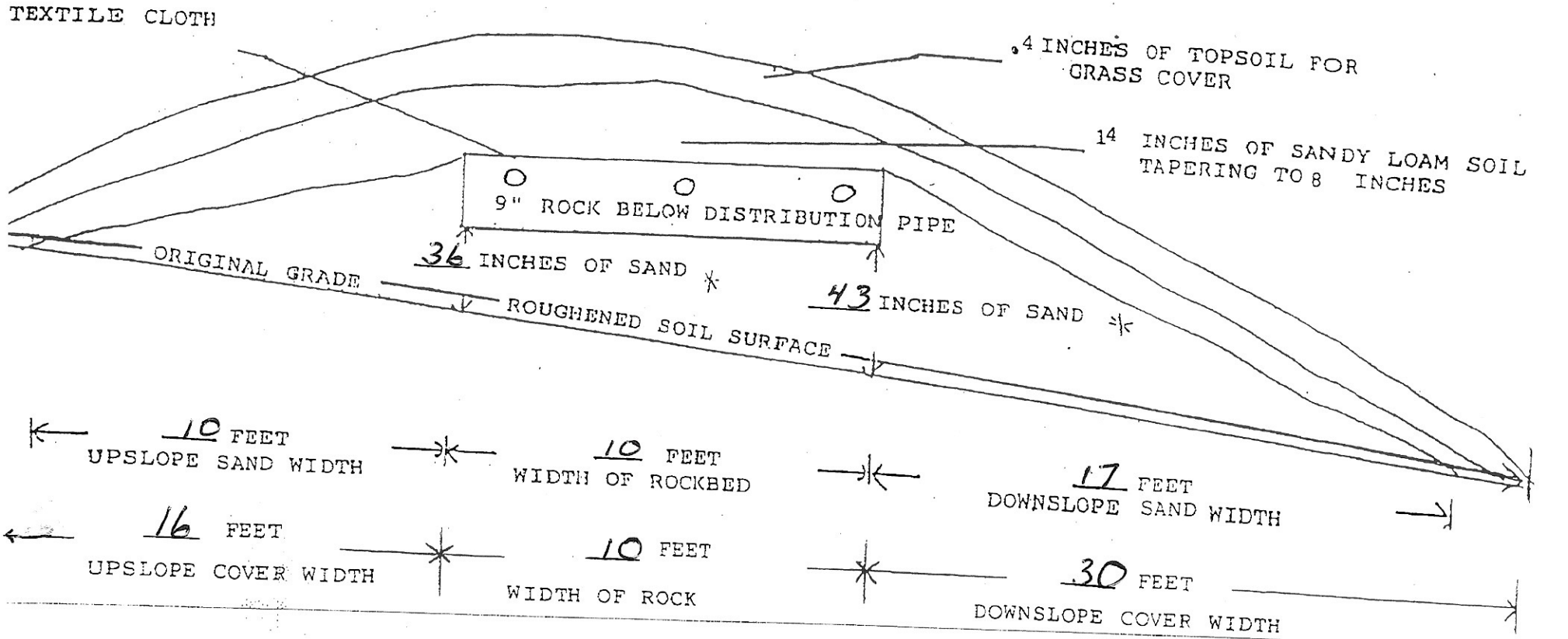
ereby certify that I have completed this work in accordance with applicable ordinances, rules and laws.

Tom O'Neil

MOUND CROSS-SECTION

6 PERCENT SLOPE OF ORIGINAL SOIL

10 FT. x 38 FT. SIZE OF ROCKBED 37 FT. x 58 FT. SIZE OF SANDBASE



MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

Sewage tank integrity assessment form

Subsurface Sewage Treatment Systems (SSTS) Program

Doc Type: Compliance and Enforcement

Purpose: This form *may* be used to certify the compliance status of the sewage tank components of the SSTS. **This form is not a complete SSTS inspection report, only a tank integrity assessment, and may only certify sewage tank compliance status when entirely completed and signed by a qualified professional.** SSTS compliance inspection report forms can be found at: https://www.pca.state.mn.us/water/inspections.

Instructions: This form may be completed, and signed, by a Designated Certified Individual (DCI) of a licensed SSTS inspection, maintenance, installation, or service provider business who personally conducts the necessary procedures to assess the compliance status of each sewage tank in the system. Only a licensed maintenance business is authorized to pump the tank for assessment. A copy of this information should be submitted to the system owner and be maintained by the licensed SSTS business for a period of five (5) years from the assessment date.

When this form is signed by a qualified certified professional, it becomes *necessary supporting documentation* to an Existing System Compliance Inspection Report: Compliance inspection form - Existing system (wq-wwists4-31b). This form can be found on the MPCA website at https://www.pca.state.mn.us/water/inspections.

The information and certified statement on this form is **required** when existing septic tank compliance status is determined by an individual other than the SSTS Inspector that submits an inspection report. This form represents a third party assessment of SSTS component compliance and is allowable under Minn. R. 7082.0700, subp. 4(B)(1). This form is valid for a period of three years beyond the signature date on this form unless a new evaluation is requested by the owner or owner's agent or is required according to local regulations. Additional Administrative Rule references for this activity can be found at Minn. R. 7082.0700, subp. 4(B),(C), and (D) and; Minn. R. 7083.0730(C).

Owner information

Owner/Representative: Kathleen Kelsey

Property address: 41090 328th Lane Aitkin MN 56431

Local Regulatory Authority: Aitkin County Parcel ID: 07-0-022001

System status

System status on date (mm/dd/yyyy): 6/7/2022

☒ **Certificate of sewage tank compliance** ☐ **Notice of sewage tank non-compliance**

Compliance criteria:

The SSTS has a seepage pit, cesspool, drywell, leaching pit, or other pit - "**Failure to Protect Groundwater.**"	☐ Yes* ☒ No
The SSTS has a sewage tank that leaks below the designed operating depth - "**Failure to Protect Groundwater.**"	☐ Yes* ☒ No
The SSTS presents a threat to public safety by reason of structurally unsound (damaged, cracked, or weak) maintenance hole cover(s) or lids or any other unsafe condition - "**Imminent Threat to Public Health or Safety.**"	☐ Yes* ☒ No

Any "yes" answer above indicates sewage tank non-compliance.

Company information

Company name: Timber Lakes Septic Service Inc

Business license number: L455

Designated Certified Individual (DCI) information

Print name: Tim Woodrow

Certification number: C7644

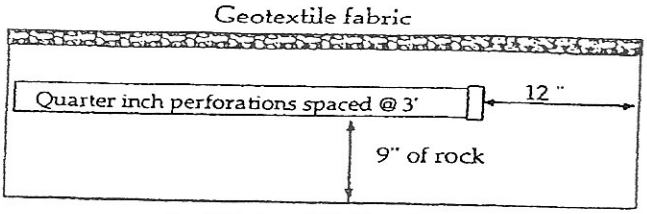
I personally conducted the work described above as a Designated Certified Individual of a Minnesota-licensed SSTS inspection, maintenance, installation, or service provider Business. I personally conducted the necessary procedures to assess the compliance status of each sewage tank in this SSTS.

***By typing/signing my name below**, I certify the above statements to be true and correct, to the best of my knowledge, and that this information can be used for the purpose of processing this form.*

Designated Certified Individual's signature: Tim Woodrow Date (mm/dd/yyyy): 6/7/2022

(This document has been electronically signed.)

PRESSURE DISTRIBUTION SYSTEM



Perf Sizing 3/16" - 1/4"
Perf Spacing 1.5'- 5'

1. Select number of perforated laterals 3

2. Select perforation spacing = 3 ft

3. Since perforations should not be placed closer than 1 foot to the edge of the rock layer (see diagram), subtract 2 feet from the rock layer length.

$$\frac{38}{\text{Rock layer length}} - 2 \text{ ft} = 36 \text{ ft}$$

4. Determine the number of spaces between perforations. Divide the length (3) by perforation spacing (2) and round down to nearest whole number.

Perforation spacing = 36 ft ÷ 3 ft = 12 spaces

5. Number of perforations is equal to one plus the number of perforation spaces(4). *Check figure E-4 to assure the number of perforations per lateral guarantees <10% discharge variation.*

12 spaces + 1 = 13 perforations/lateral

6. A. Total number of perforations = perforations per lateral (5) times number of laterals (1)

13 perfs/lat x 3 lat = 39 perforations

B. Calculate the square footage per perforation.
Should be 6-10 sqft/perf. *Does not apply to at-grades.*
Rock bed area = rock width (ft) x rock length (ft)
10 ft x 38 ft = 380 sqft
Square foot per perforation = Rock bed area ÷ number of perfs (6)
380 sqft ÷ 39 perfs = 9 sqft/perf

7. Determine required flow rate by multiplying the total number of perforations (6A) by flow per perforation *(see figure E-6)*

39 perfs x .74 gpm/perfs = 29 gpm

8. If laterals are connected to header pipe as shown on upper example, to select minimum required lateral diameter; enter figure E-4 with perforation spacing (2) and number of perforations per lateral (5) Select minimum diameter for perforated lateral = 1.25 inches.

9. If perforated lateral system is attached to manifold pipe near the center, lower diagram, perforated lateral length (3) and number of perforations per lateral (5) will be approximately one half of that in step 8. Using these values, select minimum diameter for perforated lateral = 1 inches.

E-4: Maximum allowable number of 1/4-inch perforations per lateral to guarantee <10% discharge variation

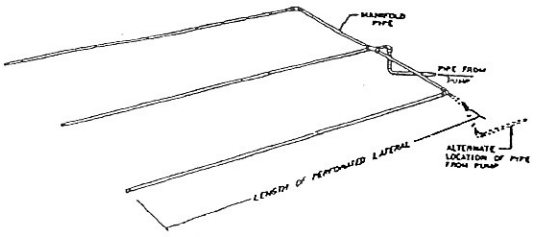
perforation spacing (feet)	1 inch	1.25 inch	1.5 inch	2.0 inch
2.5	8	14	18	28
3.0	8	13	17	26
3.3	7	12	16	25
4.0	7	11	15	23
5.0	6	10	14	22

E-6: Perforation Discharge in gpm

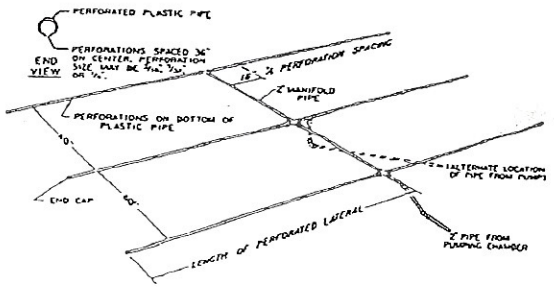
head (feet)	perforation diameter (inches) 1/8	3/16	7/32	1/4
1.0[a]	0.18	0.42	0.56	0.74
2.0[b]	0.26	0.59	0.80	1.04
5.0	0.41	0.94	1.26	1.65

[a] Use 1.0 foot for single-family homes.
[b] Use 2.0 feet for anything else.

MANIFOLD LOCATED AT END OF PRESSURE DISTRIBUTION SYSTEM



LAYOUT OF PERFORATED PIPE LATERALS FOR PRESSURE DISTRIBUTION IN MOUND



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

Tom Orvis (signature) L2132 (license #) Aug. 24, 2022 (date)

PUMP SELECTION PROCEDURE

A. Determine pump capacity

Gravity distribution

1. Minimum is 10 GPM
2. Maximum is 45 GPM

Pressure Distribution

3. a. Select number of perforated laterals 3
   b. Select perforation spacing = 3 ft.
   c. Subtract 2 ft from rock layer length:
   38 - 2 = 36 feet. (Length of laterals)

ROCK LAYER LENGTH

   d. Determine the number of spaces between perfs:
   36 / 3 = 12 spaces
   (length of lateral) / (perf. spacing)
   e. 12 spaces + 1 = 13 perforations per lateral
   f. Multiply perforations per lateral by number of laterals to get total number of perforations:
   13 x 3 = 39
   (perfs/lateral) x (laterals) = (perforations)
   g. 39 X .74 = 29 GPM
   (Perforations) x (gpm/perfs)

SELECTED PUMP CAPACITY 29 GPM

B. Determine head requirements:

1. Elevation difference beteween pump & point of discharge:
   14 feet
2. If pumping to a pressure distribution system, add 5 feet; for gravity add zero: 5 feet
3. Friction Loss
   a. Enter friction loss table with GPM and pipe diameter. Read friction loss in feet per 100 ft in table.
   F.L. = 1.55 ft/100 of pipe
   b. Determine total pipe length from pump to discharge point. Add 25% to pipe length for fitting loss.
   145 length x 1.25 201 feet.
   c. Calculate total friction loss by multiplying friction loss in 100 ft. of pipe by equivalent pipe length (B):

Total friction loss = 1.55 x 201 /100 = 3.2 feet

4. Total head required is the sum of the elevation difference, special head requirements and total friction loss:

14 + 5 + 4 TOTAL HEAD 23
(1) (2) (3c)

SELECT A PUMP TO DELIVER AT LEAST 29 GPM WITH AT LEAST 23 FEET OF TOTAL HEAD.

If laterals are connected to a header pipe in a pressure system, select the minimum size lateral diameter; enter the table with perforation spacing and the number of perforations per lateral.

Select minimum size of lateral 1 1/4

For a center manifold system the values will be ½ of above.

Perforation Discharges in GPM

Head (feet)	Perforation diameter (inches)	
	7/32	1/4
1.0a	0.56	0.74
1.5	0.69	0.90
2.0b	0.80	1.04

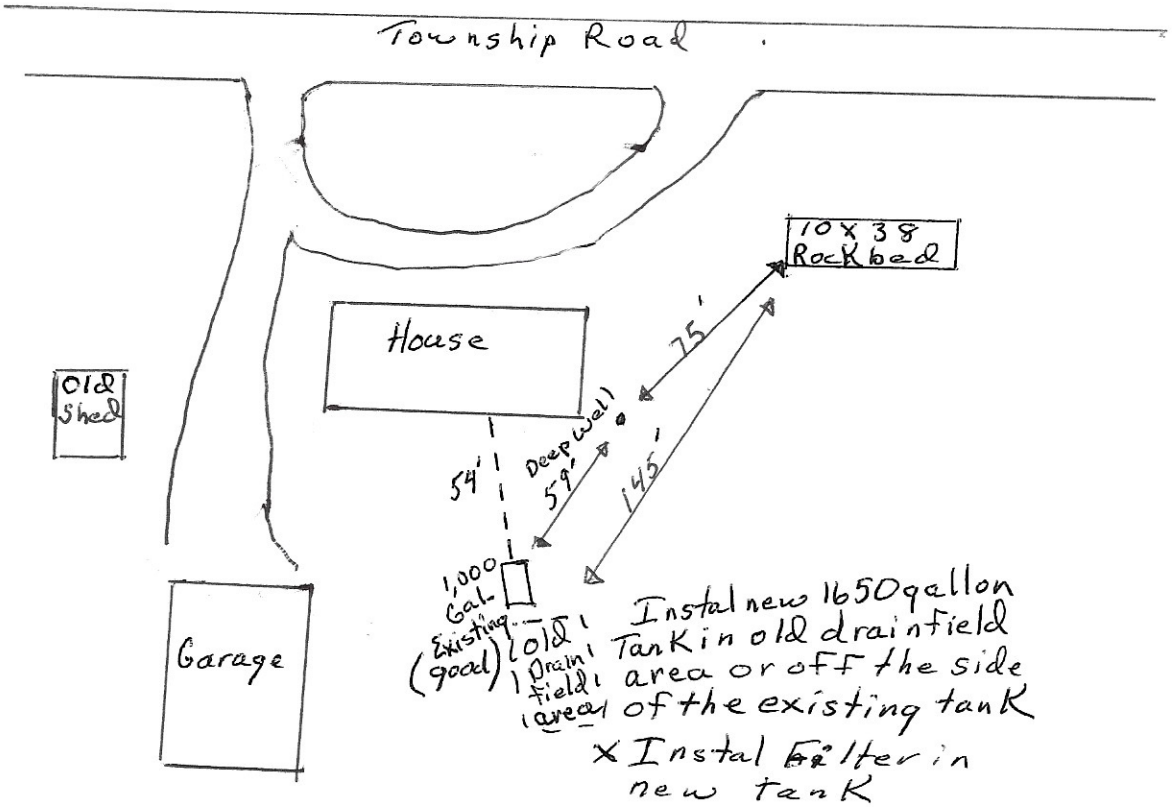
a. Use 1.0 foot single homes
b. Use 2.0 feet for anything else

FRICTION LOSS IN PLASTIC PIPE

Flow Rate GPM	1.5"	2"	3"
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

Max. No. of 1/4" perfs per lateral. (10%var)

Perforation spacing. (feet)	1 1/4"	1 1/2"'	2"
2.5 feet	14	18	28
3.0 feet	13	17	26
3.3 feet	12	16	25
4.0 feet	11	15	23
5.0 feet	10	14	22



Elevations:

Bench Mark (Top of existing Tank Cover	100
Existing Tank Outlet	98
New tank inlet	97
pump elevation	93.5
Ground under rock	103
Bottom of rock bed	106
Manifold	106.75