

LPP Worksheet

Absorption Area

Step 1 is calculating daily waste flow

_____ Bedrooms at 120 gal/day/bedroom= _____gal/day

Step 2 Determine loading rate (1st page of site evaluation)

_____gal/day/ft²

Step 3 Total area needed for absorption area=

_____gal/day divided _____(load rate)= _____total ft² needed in absorption area

Step 4 Determine total feet of lateral lines. Spacing between trenches is 5' minimum to prevent overloading. Divide total ft² by 5 to get total feet of lateral lines.

_____ft² divided by 5'= _____linear feet of lateral lines

***Remember..... lines *cannot* exceed 70 ft!**

Number of lines _____

Septic and Pumping Tanks

Septic tank size _____

Pump tank size _____ (must be at least 2x the total gal/day)

Dosing Rate

Use Constants

5/32" hole diameter

5' hole spacing

3' head pressure

Step 1 Calculate the number of holes

Each line is _____ ft divided by 5' spacing = _____ holes per line

_____ holes x _____ lines = _____ total number of holes

Step 2 Flow rate is measured in gal/min

Flow rate per hole—Use Table 3 for flow rates

At 3' pressure head + 5/32" holes= .50gal/min

.50GPM x _____ total holes= _____gal/min

Pump Selection

Use table 5 to determine the pump size needed _____

Total Dynamic Head (TDH)

Static Head + Operating Head + Friction Head = TDH

Static head = vertical distance from pump turnoff level to the point of discharge.

Operating head (pressure head)= 3 ft (this is a constant)

Fiction head = Resistance to flow from fittings (measured length and loss from fittings) Use table 6.

1. Static head = _____ ft
2. Operating head = 3ft
3. Friction head = _____ measured length + _____ loss from fittings = total friction head
Divide total friction head by 100 (_____ divided by 100) = _____ per 100ft

This gives you feet in 100' increments

Using table 5 multiple your friction head per 100ft increments by the figure in table 5 at

_____ gal/min in 2" pipe

_____ x _____ = _____ total friction head

Then add your static head _____ + operating head _____ + fiction head _____ = _____ TDH

Make sure you use the right pump curve that goes with your individual pump

Compare the TDH in feet by the total gallon/min to get correct pump size

Dosing Volume

Use table 4 to find storage capacity.

Volume dose= volume supply line + 5(volume lateral lines)

1. Supply line = _____ ft for 2" pipe
Volume supply = (Length of the supply line divided by 100ft) x 16.2 gal (table 4)
= _____ gallons
2. Lateral lines = _____ ft total of 1 ½ " pipeline
Volume laterals = (_____ ft divided by 100ft) x _____ gallons (table 4)
= _____ gallons
3. Volume dosing =volume of laterals _____ x 5= _____ gallons + volume of supply _____

Dosing Depth

Dosing depth = (volume dosed divided by volume tank) x liquid depth of tank in inches

(_____) divided by (_____) x (_____) = _____ inches

The float control switch for the pump should be set for a _____ inch draw down to provide automatic doses of _____ gallons.

Check Valve Calculation

Use check valve only when total storage volume is greater than ¼ of the total daily waste flow.

Volume storage= Volume supply line + volume lateral lines

(_____) + (_____) =GPD _____ GPD x .25 = + _____

Table 3

**FLOW RATES
(GPM)**

Pressure Head Ft	Psi	Hole Diameter (inches)			
		5/32	3/16	7/32	1/4
1	0.43	0.29	0.42	0.56	0.74
1.5		0.35			
2	0.87	0.41	0.59	0.80	1.04
2.5		0.45			
3	1.30	0.50	0.72	0.98	1.28
3.5		0.54			
4	1.73	0.58	0.83	1.13	1.48
4.5		0.61			
5	2.16	0.64	0.94	1.26	1.65
5.5		0.66			
6	2.58	0.69	1.04	1.37	1.81

Table 4

Storage capacity per 100 ft of PVC pipe

Pipe Diameter (inch)	60 PSI	Storage Capacity Schedule 40 gal/100 feet
1	5.8	4.1
1 ¼	9.0	6.4
1 ½ lateral	12.5	9.2
2 supply	19.4	16.2
3	42.0	36.7

Table 5

Friction loss per 100 feet of plastic pipe

Flow Rate GPM	Pipe size (inches)						
	1"	1 ¼"	1 ½"	2"	2 ½"	3"	4"
2	0.3						
3	0.6						
4	1.0	0.3					
5	1.5	0.4	0.2				
6	2.1	0.6	0.3				
7	2.9	0.8	0.4				
8	3.6	1.0	0.5				
9	4.6	1.2	0.6				
10	5.5	1.5	0.7	0.2			
12		2.1	1.1	0.3			
14		2.7	1.3	0.4			
16		3.5	1.7	0.5	0.2		
18		4.4	2.1	0.6	0.3		
20		5.2	2.5	0.9	0.3		
21				0.975			
25			3.8	1.3	0.5		
30			5.2	1.8	0.6		
35				2.5	0.8		
40				3.1	1.0	0.4	
45				3.8	1.3	0.6	
50				4.7	1.6	0.7	
60					2.2	0.9	0.2
70					2.9	1.2	0.3
80					3.7	1.5	0.4
90					4.6	1.9	0.5
100						2.3	0.6

Table 6

Friction losses through plastic fittings
In terms of equivalent lengths of plastic pipe

Type Of Fitting	1 ¼"	1 ½"	2"	2 ½"	3"	4"
90° STD Elbow	7.0	8.0	9.0	10.0	12.0	14.0
45° Elbow	3.0	3.0	4.0	4.0	6.0	8.0
STD. Tee (Diversion)	7.0	9.0	11.0	14.0	17.0	22.0
Check Valve	11.0	13.0	17.0	21.0	26.0	33.0
Coupling or Quick Disconnect	1.0	1.0	2.0	3.0	4.0	5.0
Ball Valve	0.9	1.1	1.4	1.7	2.0	2.3