

Figure 1. Map showing Cortes Island and Vancouver, BC.

# Gonzaga University Mango Designs- Slow Sand Filter Design K-1™



(River Ridge Do it Best Hardware, personal communication, 2021)

Item	Quantity	Cost (USD/unit)	Total Cost (USD)
525 gal tanks	2	459.4	918.8
disinfection tanks	2	175	350
Rain head	1	47	47
Filter tank	1	230	230
float valve	1	1	1
Asahi Type-21 Ball Valve	6	92	552
Air Pump	1	55	55
Sand	0.1925 m <sup>3</sup>	5	70
Gravel	0.7158 m <sup>3</sup>	5	10
PVC Pipe	10 ft	1	10
Cumulative Cost of Materials (USD):			2243.8

Table 2.4.1: Disinfection Assumptions

Parameter	Value
<b>Chlorine Dose</b>	2 mg/L
<b>CT</b>	72 mg/L*min
<b>Giardia Log Removal</b>	1
<b>Chlorine Residual</b>	1 mg/L
<b>Volume</b>	121.6 L
	32.1 Gal
<b>pH</b>	8
<b>% Chlorine in Bleach</b>	5 %
<b>Conc. Chlorine in Bleach</b>	50,000 mg/L

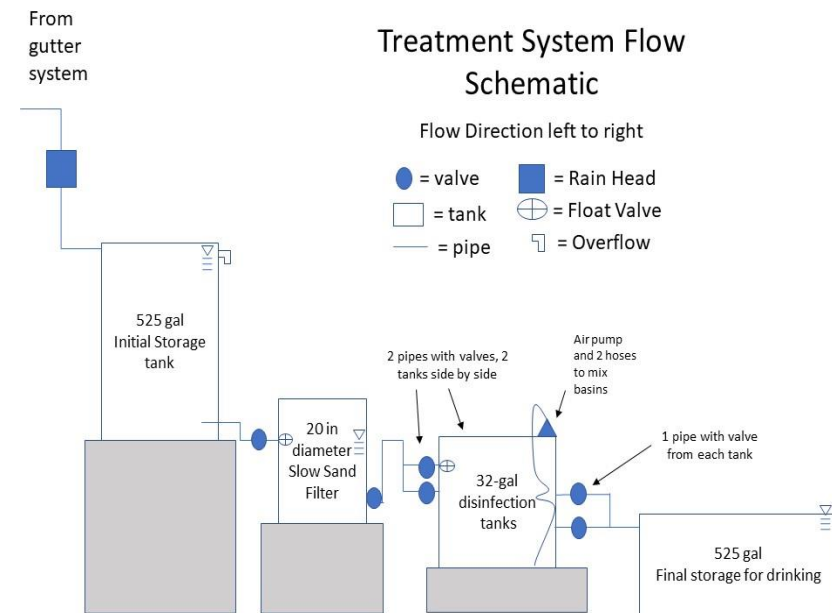


Figure 2.. Schematic of Mango Design K-1 Slow Sand Filer System

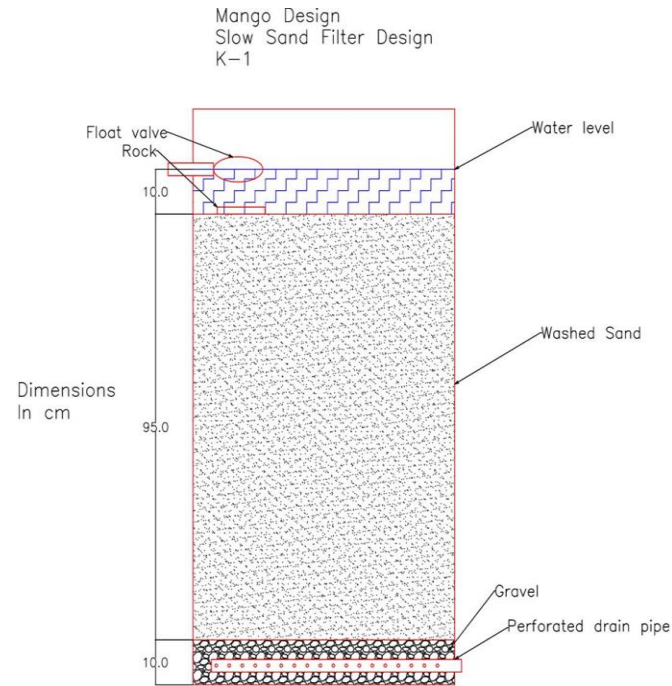


Figure 3. Schematic of Mango Design K-1 Slow Sand Filer System

Table 2.4.2: Bleach Volumes to Add

Water Volume (L)	Water Volume (gal)	Dose (mg/L): 2	
		Volume of Bleach (mL)	Time (min)
5	1	0.2	72
10	3	0.4	72
15	4	0.6	72
20	5	0.8	72
25	7	1	72
30	8	1.2	72
35	9	1.4	72
40	11	1.6	72
45	12	1.8	72
50	13	2	72
75	20	3	72
100	26	4	72
122	32	5	72