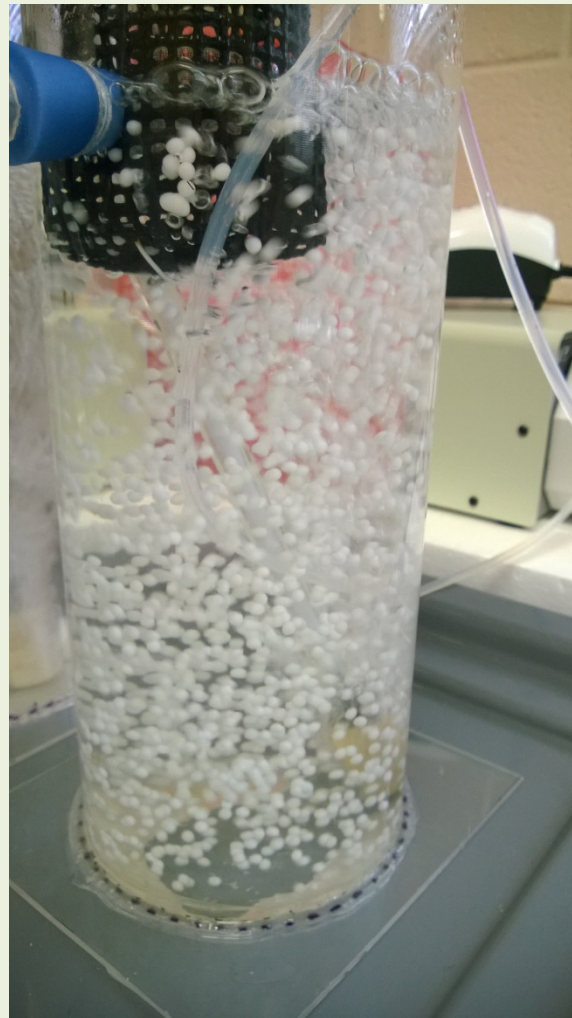


Biofilm Carriers

Gel beads



Swim-bed

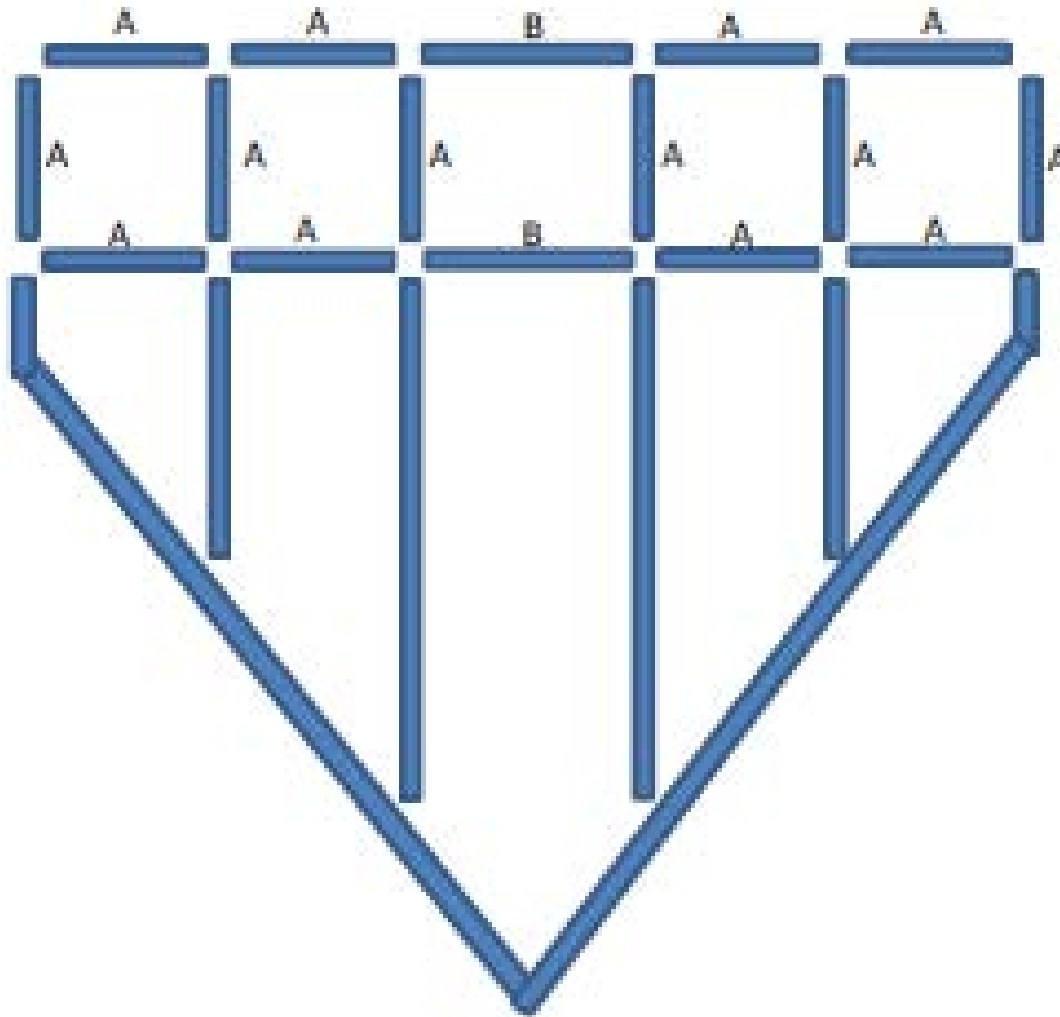


Slime: 3 weeks (Guam)

“Nonwoven” Sheets



Framework for biocarrier



A = 2'-0" X 14

B = 2'-3" X 2
approximate
lengths

April 2014 - a



April 2014 - b



April 2014 - c



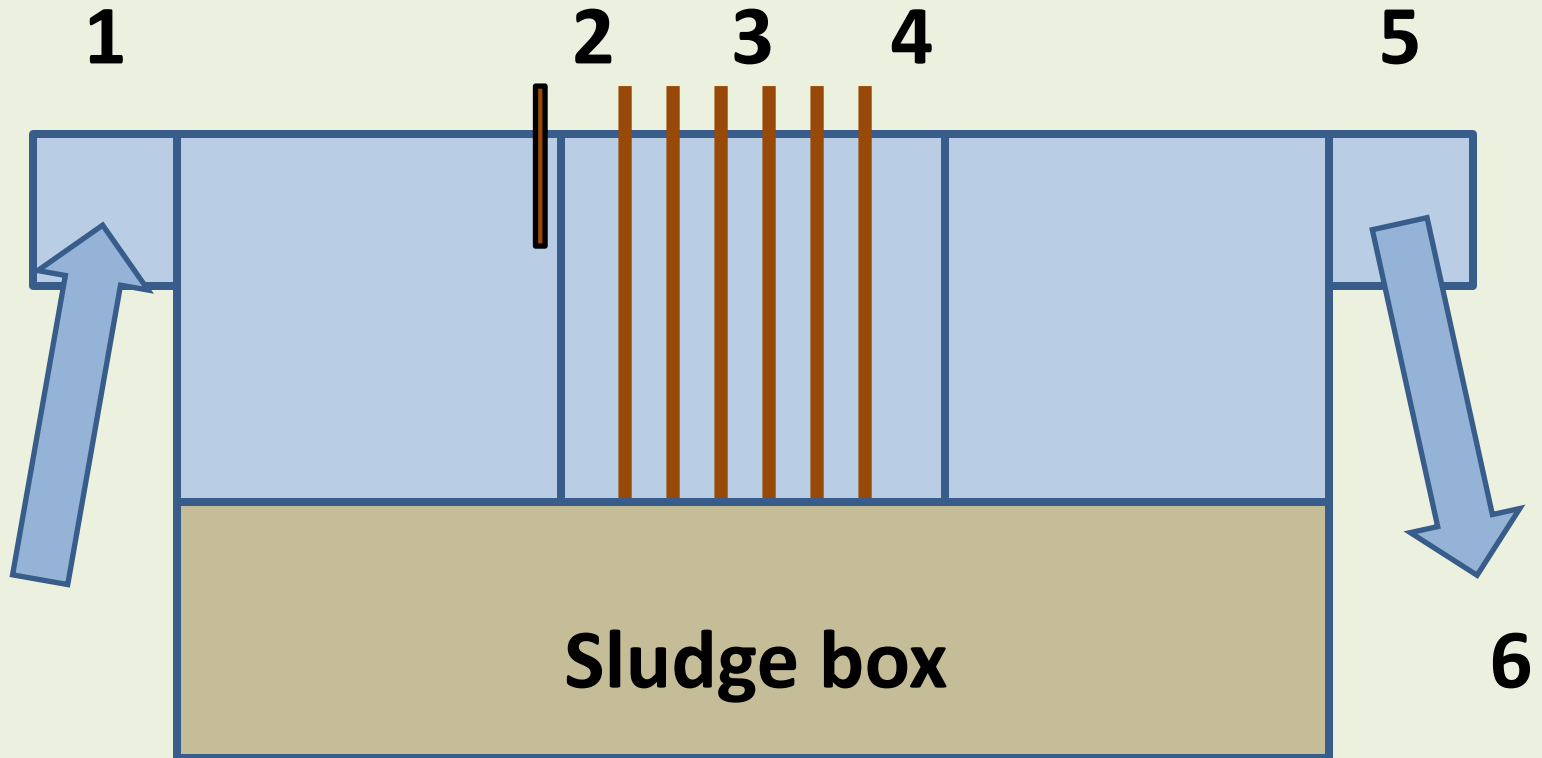
June 2014 - d



Later



Sampling Plan



June 2014



COD Time course

2014	1	2	3	4	5	6	
9/5	62	5		107	53		Rain!
*9/25	511				415		
10/17	101	59		39	120		Rain
*12/9	308	209		206	226		
2015	open	channel	(no	Biofilm)			
1/23	331	273			234		
1/30	328	290			285		
2/6	256	272			254		
2/11	330	300			340		
2/13	297	305			295		
3/27	355	425			383		
11/6	309	355			341		

COD Time course

2015	1	2	3	4	5	6	
4/30	switch	Back to	Biofilm	Channel			
5/16	464	476		301	311		
5/19	349	286		260	284		
7/10	389	280		282	311		
7/24	311	315		310	293		
9/25	389	280		282	311		
10/2	424	384		339	394		
10/9	362	274		216	214		
Early summary: (inf – Eff) = Cut (SD %)							
'n=7 <No-bio>: 316 – 305 = 3 % (13.8)							
'n=7 <Yes-bio>: 384 – 303 = 21% (12.7)							

Inspection – Dec. 2014



What's next?

1. Biocarrier SF/CF = 1.4 (500 would be better)
 - Surface 2X, 20% → 40% ??
 - Get real, 40% → 80% ???
 - Aeration, ????
 - Nitrogen cycle?
2. Composting for waste sludge
 - Monitor for TC, E coli, Enterococcus
 - Apply to crops, or repair badlands??
 - Save landfill, make \$\$\$???

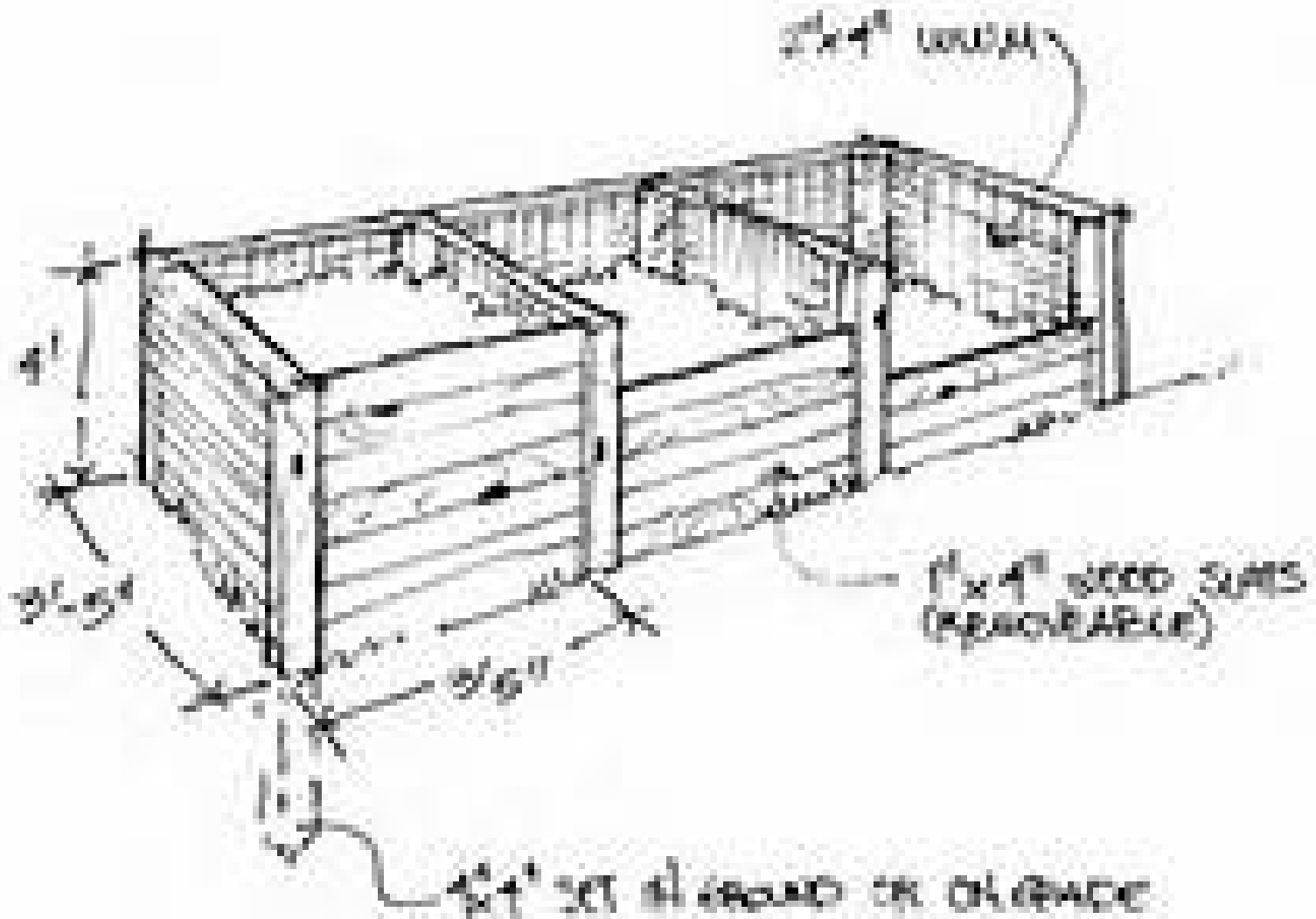
Excess sludge ?



1 g sludge



Sludge → Compost



Sludge → Compost



Sludge → Compost



Treatment:

- 50% moisture
- Aerobic (mix twice/wk)
- Temp. > 130* F



Sludge → Compost

After about
1 month →



Sludge → Compost

June – raw sludge (1 g)

Total Coliform: > 2,400 **Now used for food crops!!**

E. coli: > 2,400

August – treated compost (1 g)

Total Coliform: > 2,400

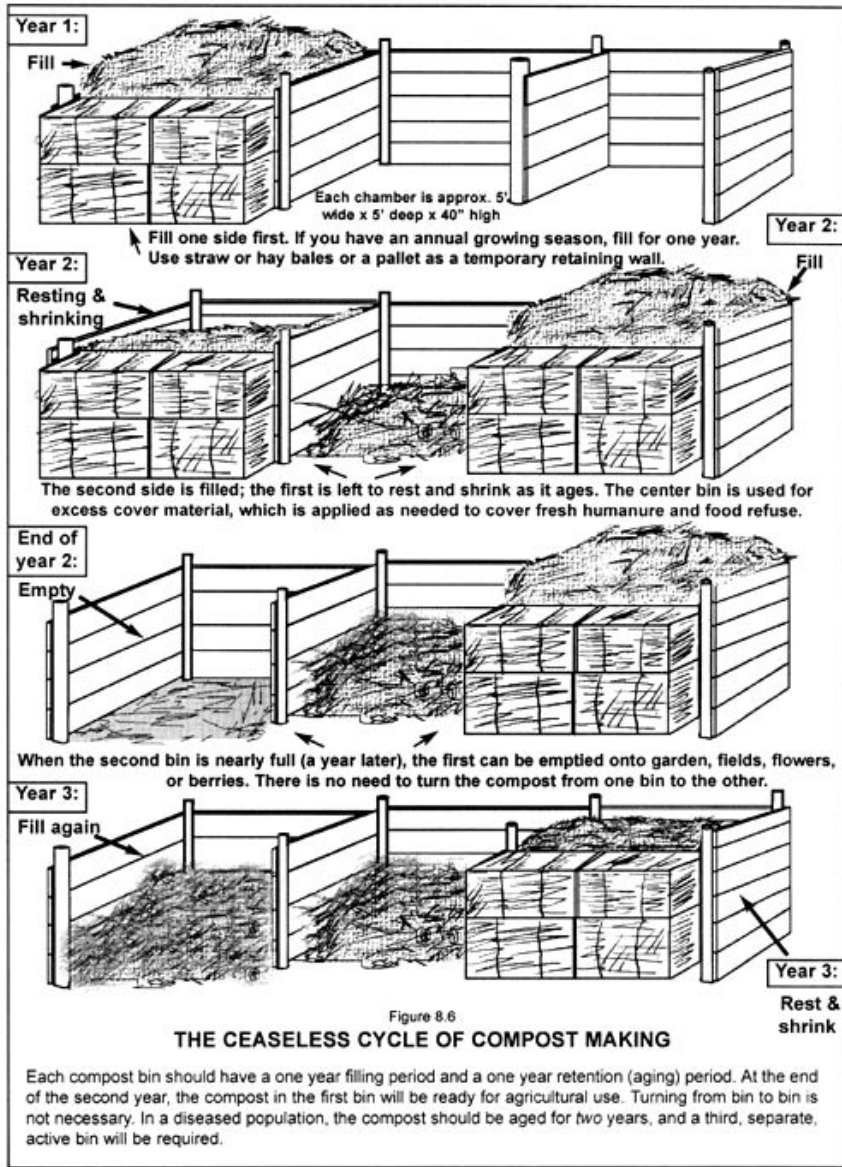
E. coli: = 21 **Could use for non-food crops?**

Notes: 1. For food crops, only Class A biosolids;
i.e., TC & Ec nearly zero (0).

2. Compost **temp > 130°F** (this test, **only 120°F**) ?
Should get hotter at larger/deeper scale.

3. Must be about **50% moist** (this test too dry).

Sludge → Compost



?

THANK YOU



Happy Hour!

