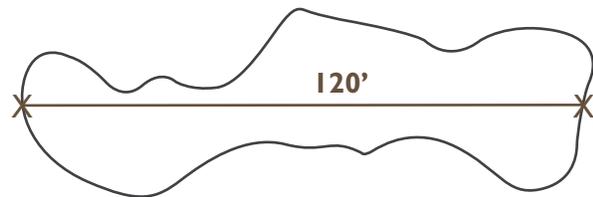


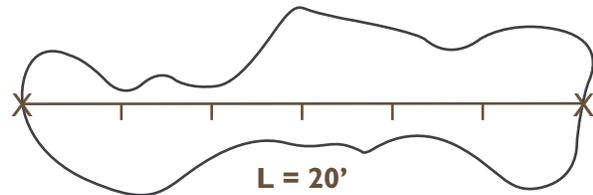
## A Workshop on Shoreline Management & Stabilization Using Vegetation

Here are two ways to estimate irregular areas for planning purposes. If you have a scaled drawing, map, or aerial photograph, photocopy the next page onto a transparency and use that. If you are working from a field sketch, the technique below will give you a good estimate from field measurements. The more measurements you can take, the more accurate the estimate will be. The measurements could be made with a tape, rangefinder, or by pacing off.

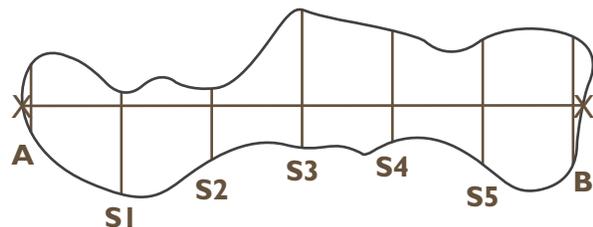
**Step 1:** Make a rough sketch of the area on paper. Install stakes at the two farthest ends and mark the points on the drawing. Measure the length and record it on the drawing.



**Step 2:** Divide the length line into an even number of equal segments, marked on the drawing. More segments will give you better accuracy. Record the segment length as "L".



**Step 3:** Draw a line across the area perpendicular to the length line, at both ends of the length line and at each segment mark. Label the first line A and the last line B. Label each line at a segment mark with consecutive numbers, starting with S1.



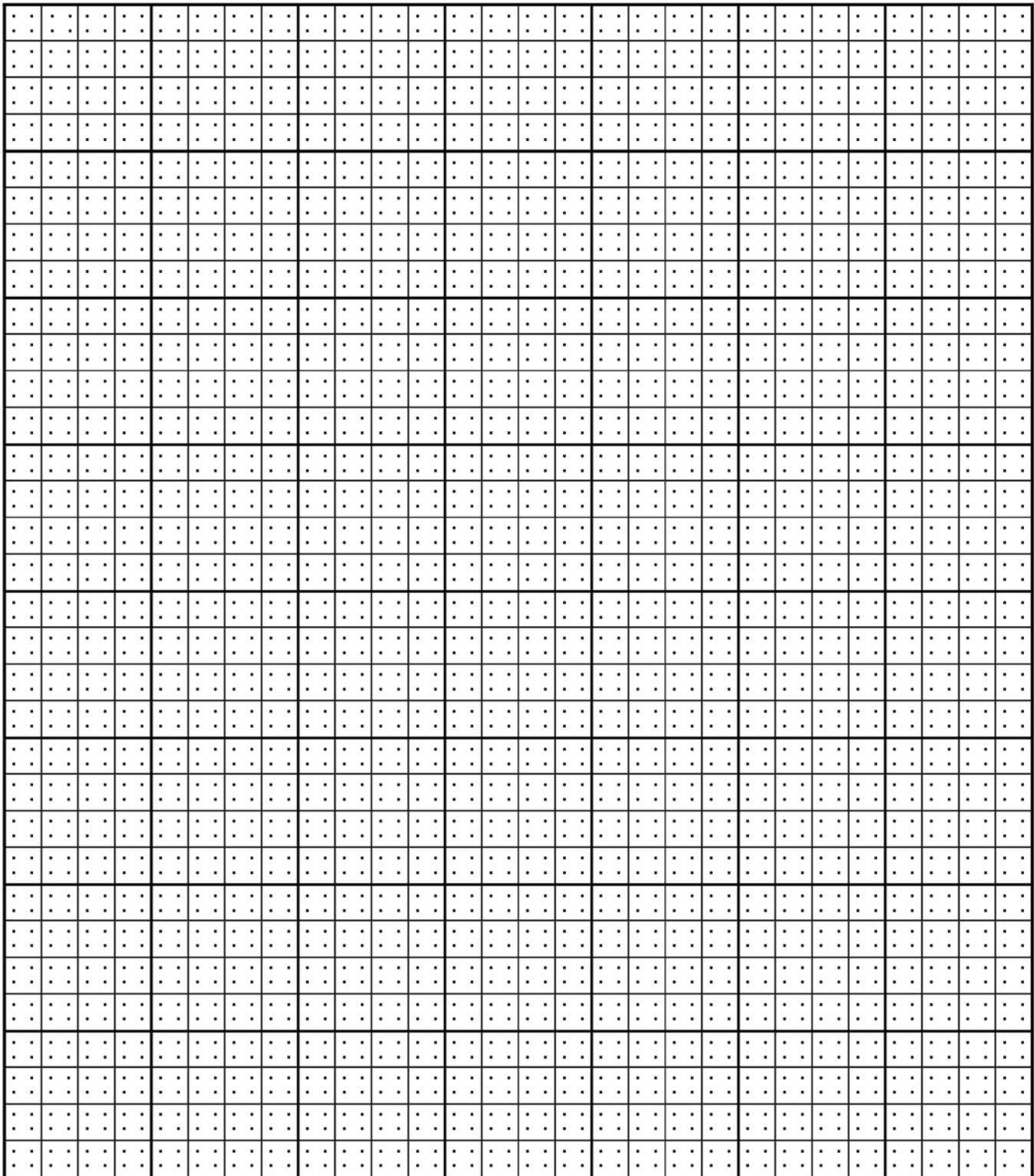
**Step 4:** Measure or estimate the length of each line.

A = 10'      S3 = 28'      B = 18'  
S1 = 22'      S4 = 20'  
S2 = 12'      S5 = 18'

**Step 5:** Enter the results into the following equation:

Area =  $L/3 \times [(A + B) + 2(\text{sum of even-numbered lines}) + 4(\text{sum of odd numbered lines})]$

$20/3 \times [(10+18) + 2(12+20) + 4(22+28+18)]$   
 $6.7 \times [28 + 2(32) + 4(68)]$   
 $6.7 \times (28 + 64 + 272)$   
 $6.7 \times 364$   
2438.8 sq. ft.



Place grid over area to be measured. Count the number of dots within the area to be measured. Multiply by the appropriate conversion factor from the table. For scales not shown on the table, use the following formula to calculate the conversion factor:

$$\text{Conversion factor} = (\text{length equal to } 1'')^2 / 64$$

For example, if the scale is 1" = 25' the conversion factor would be:

$$\text{Each dot} = 25^2 / 64 = 625 / 64 = 9.766 \text{ sq. ft.}$$

Scale: 1" =	Ratio	Area per square inch	Conversion factor: Each dot =
20'	1:240	400 sq. ft.	6.25 sq. ft.
30'	1:360	900 sq. ft.	14.0625 sq. ft.
40'	1:480	1600 sq. ft.	25 sq. ft.
50'	1:600	2500 sq. ft.	39.0625 sq. ft.
60'	1:720	3600 sq. ft.	56.25 sq. ft.
100'	1:1200	10000 sq. ft.	156.25 sq. ft.
500'	1:6000	5.74 acres	0.0897 acres
1000'	1:12000	22.96 acres	0.359 acres
1 mile	1:63360	640 acres	10.00 acres