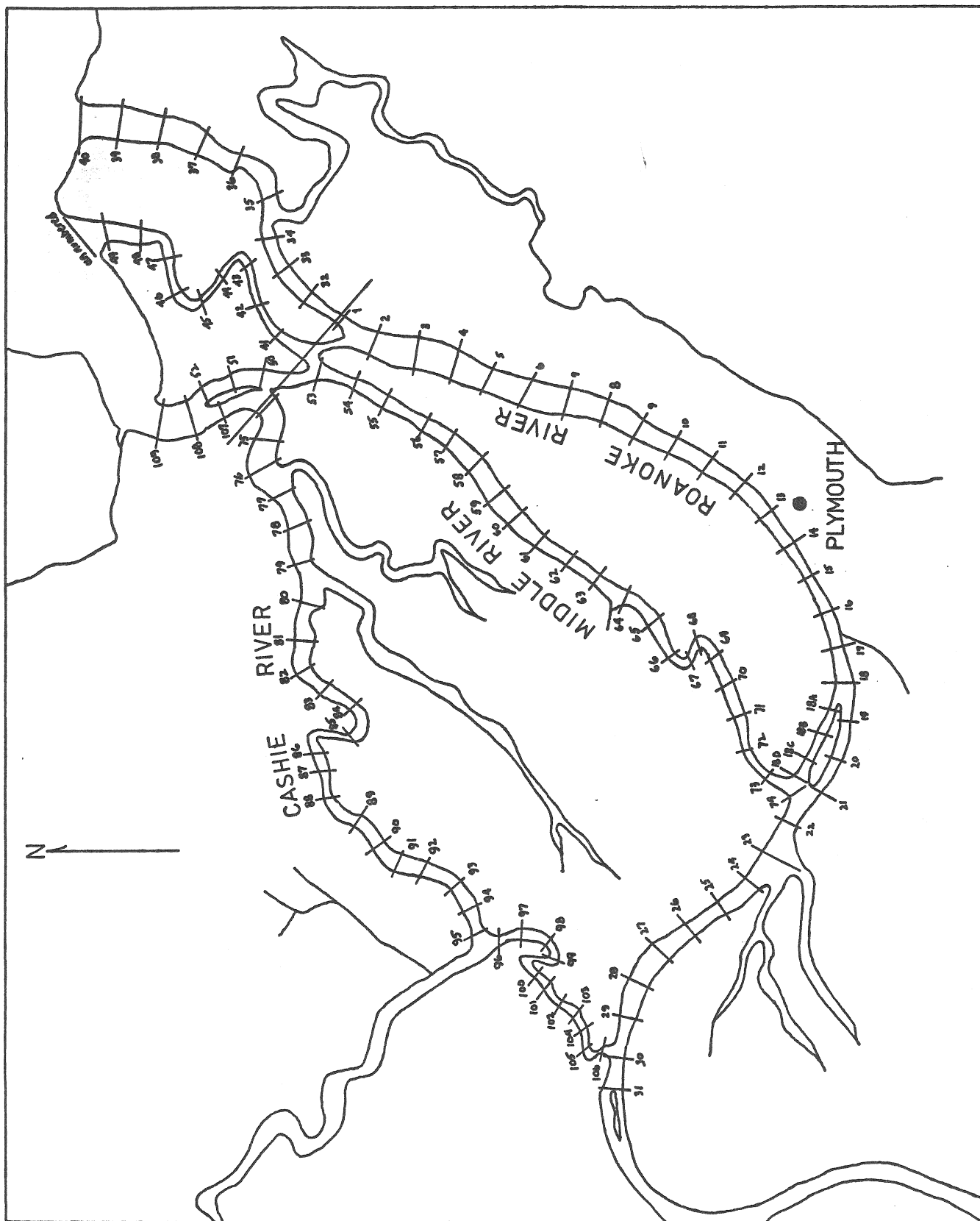




B1. Roanoke River system transects used for volume estimates.

B2. Calculation of Roanoke River volumes by river system.

calculation of Roanoke River volumes by system

$\text{abs}((\text{tr1}-\text{tr2}) * 231) + (\text{tr1} * 462)$

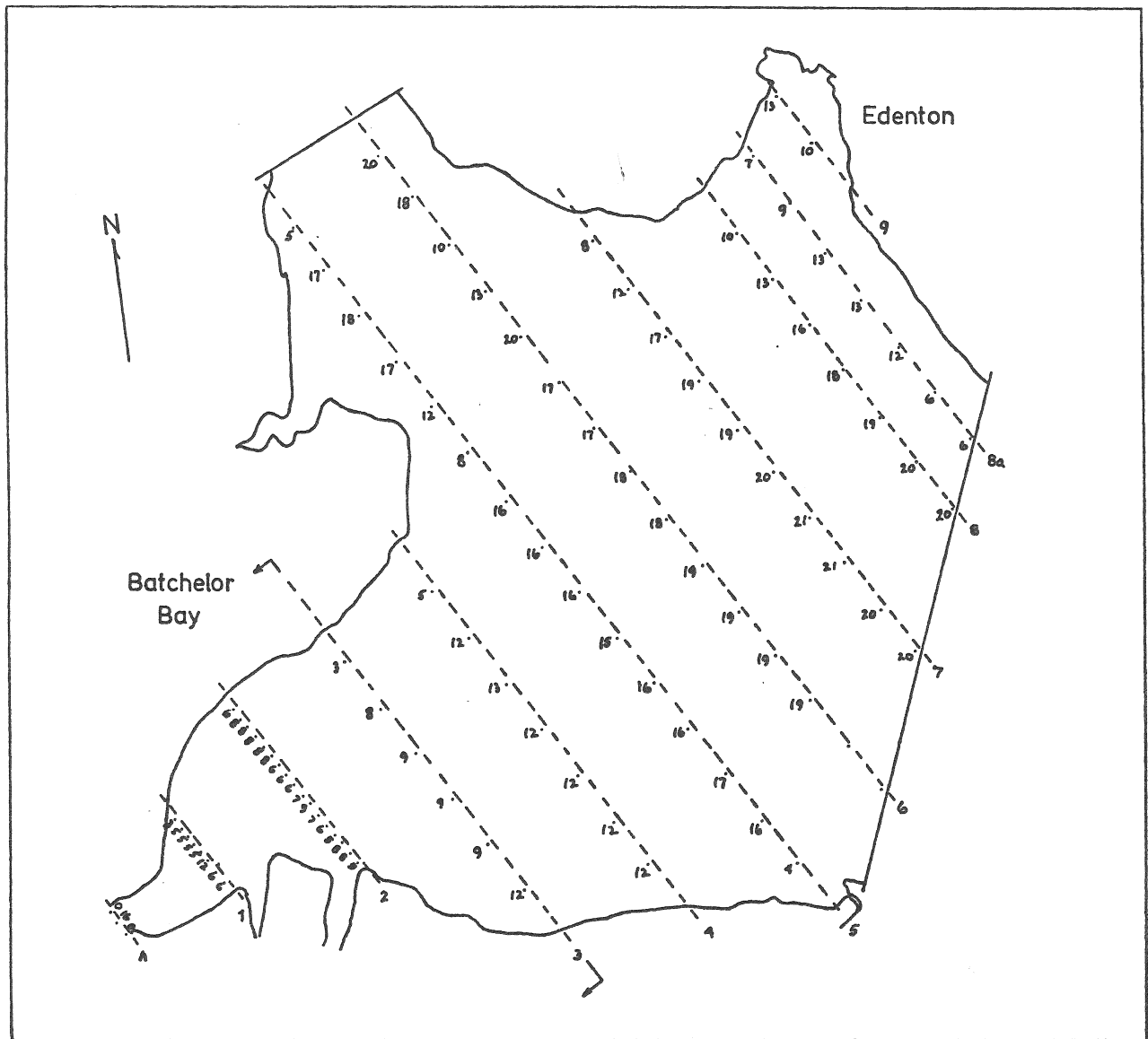
$\text{increasing} = \text{abs}((\text{c12}-\text{c13}) * 231) + (\text{c12} * 462) = \text{volume}$

$\text{decreasing} = \text{abs}((\text{c13}-\text{c14}) * 231) + (\text{c14} * 462) = \text{volume}$

transect interval = 462m

volume in m3

Line	C	Transect	sq. area	Roanoke Volume	trans	sq. area	Middle Volume	trans	sq. area	System Eastmost Volume	trans	sq. area	Cashie Volume
11					bridge			bridge			bridge		
12		1	746.6	bridge	50	465.3	191384	41	161.7	74705	75	654	302148
13		2	801.4	357588	51	486	219750	42	121.6	65442	76	737.8	321506
14		3	705.5	348094	52	442.1	214391	43	165.3	66274	77	942.1	388057
15		4	693.2	323100	53	363.2	167798	44	152.8	73481	78	723.4	384731
16		5	751.4	333703	54	359.8	167013	45	148.2	69531	79	582.2	301594
17		6	889.4	379025	55	367.8	168076	46	140.3	66644	80	413.2	229937
18		7	630	350981	56	411.9	180111	47	157.3	68746	81	421	192700
19		8	713.4	310325	57	403.8	188427	48	161.8	73712	82	372.7	183345
20		9	776.1	344075	58	366.7	177986	49	266.2	98868	83	355.3	168168
21		10	694.6	339732	59	349.7	165488	mouth	734.4	231139	84	340.3	160684
22		11	865.2	360314	60	350.6	161769				85	437.7	179718
23		12	654.8	351120	61	401.1	173643			888542	86	973	325872
24		13	747.2	323862	62	372.2	178632				87	302.8	294710
25		14	973.5	397482	63	314.6	158651				88	286.5	136128
26		15	638.6	372395	64	478.4	183183				89	282.5	131439
27		16	560.8	277061	65	758.4	285701				90	287.6	131693
28		17	655.2	280896	66	660.7	327812				91	309.2	137861
29		18	661.1	304065	67	637.3	299838				92	433.5	171564
30	18a	105.9	177177	68	1151.8	413282					93	301.4	169762
31	18b	177.1	65373	69	653.3	416978					94	224.2	121414
32	18c	203.4	87896	70	584.9	286024					95	287.1	118110
33	18d	138.5	78979	71	659.5	287456					96	305.5	136891
34	19	510.8	269346	72	580.4	286417					97	457.8	176322
35	20	516.1	237214	73	452.9	238692					98	224.2	157542
36	21	421.9	216678	74	731.4	273573					99	180.8	93555
37	22	506.9	214553								100	286.5	107946
38	23	934.5	332963			5812076					101	196.4	111550
39	24	1035.3	455024								102	222	96650
40	25	819.4	428436								103	199.7	97413
41	26	796.3	373227								104	307.3	117117
42	27	840.5	378101								105	107.6	95842
43	28	852.5	391083								106	255.4	83853
44	29	884.4	401224								107	597.5	552090
45	30	819.7	393647								108	223.3	189605
46	31	901.1	397505								109	1506.5	399584
47	32	485.7	284661										6967099
48	33	635.9	259090										
49	34	632.4	292977										
50	35	650.7	296396										
51	36	560.1	279695										
52	37	542.1	254608										
53	38	1085.7	376022										
54	39	591.2	387364										
55	40	853.8	333795										
56													
57			13416850										



B3. Albemarle Sound transects used for volume estimates.

B4. Calculation of cross-sectional areas of Albemarle Sound.

Calculation of cross-sectional area of Albemarle Sound
transects measured on NOAA chart 12205

$$\text{increasing} = \text{abs}((H14-H13)*I14)/(2)+(H13*I14)$$

$$\text{decreasing} = \text{abs}((H16-H17)*I17)/(2)+(H17*I17)$$

H

I

transect 9					transect 8a			
L	depth		distance(m)	area(m2)	depth		distance(m)	area(m2)
	(ft)	(m)			(ft)	(m)		
12	0	0.00	0	0	0	0	0	0
13	3	0.91	182.9	83.6	7	2.13	548.6	585.2
14	10	3.05	914.4	1811.6	9	2.74	914.4	2229.7
15	0	0.00	914.4	1393.5	13	3.96	914.4	3065.8
16					13	3.96	914.4	3623.2
17					12	3.65	914.4	3483.9
18					6	1.82	914.4	2508.4
19					6	1.82	914.4	1672.3
20								
21								
22								
23								
transect 8					transect 7			
L	depth		distance(m)	area(m2)	depth		distance(m)	area(m2)
	(ft)	(m)			(ft)	(m)		
24								
25								
26								
27								
28	0	0.00			0			
29	10	3.05	914.4	1393.5	8	2.44	640.1	780.4
30	13	3.96	914.4	3205.2	12	3.66	914.4	2787.1
31	16	4.88	914.4	4041.3	17	5.18	914.4	4041.3
32	18	5.49	914.4	4738.1	19	5.79	914.4	5016.8
33	19	5.79	914.4	5156.1	19	5.79	914.4	5295.5
34	20	6.10	914.4	5434.8	20	6.10	914.4	5434.8
35	20	6.10	914.4	5574.2	21	6.40	914.4	5713.5
36					21	6.40	914.4	5852.9
37					20	6.10	914.4	5713.5
38					20	6.10	914.4	5574.2
39								
40								
41								
transect 6					transect 5			
L	depth		distance(m)	area(m2)	depth		distance(m)	area(m2)
	(ft)	(m)			(ft)	(m)		
42								
43								
44								
45								
46	20	6.10	823	5017.0	0			
47	20	6.10	914.4	5574.2	5	1.52	640.1	487.8
48	18	5.49	914.4	5295.5	17	5.18	914.4	3065.8
49	10	3.05	914.4	3901.9	18	5.49	914.4	4877.4
50	13	3.96	914.4	3205.2	17	5.18	914.4	4877.4
51	20	6.10	914.4	4598.7	12	3.66	914.4	4041.3
52	17	5.18	914.4	5156.1	8	2.44	914.4	2787.1

53	17	5.18	914.4	4738.1	16	4.88	914.4	3344.5
54	18	5.49	914.4	4877.4	16	4.88	914.4	4459.3
55	18	5.49	914.4	5016.8	16	4.88	914.4	4459.3
56	19	5.79	914.4	5156.1	15	4.57	914.4	4598.7
57	19	5.79	914.4	5295.5	16	4.88	914.4	4320.0
58	19	5.79	914.4	5295.5	16	4.88	914.4	4459.3
59	19	5.79	914.4	5295.5	17	5.18	914.4	4598.7
60	19	5.79	914.4	5295.5	16	4.88	914.4	4598.7
61	19	5.79	914.4	5295.5	4	1.22	914.4	2787.1
62					0		914.4	557.4
63								
64								
65								
66	transect 4				transect 3			
67	depth				depth			
68	(ft)	(m)	distance(m)	area(m2)	(ft)	(m)	distance(m)	area(m2)
69								
70	0	0			0	0		
71	5	1.52	914.4	696.8	3	0.91	594.4	271.8
72	12	3.66	914.4	2369.0	8	2.44	914.4	1532.9
73	13	3.96	914.4	3483.9	9	2.74	914.4	2369.0
74	12	3.66	914.4	3483.9	9	2.74	914.4	2508.4
75	12	3.66	914.4	3344.5	9	2.74	914.4	2508.4
76	12	3.66	914.4	3344.5	12	3.66	914.4	2926.4
77	12	3.66	914.4	3344.5	0	0	914.4	1672.3
78	0	0	914.4	1672.3				
79								
80								
81								
82								
83	transect2				transect 1			
84	depth				depth			
85	(ft)	(m)	distance(m)	area(m2)	(ft)	(m)	distance(m)	area(m2)
86								
87	0	0.00			0	0.00		
88	6	1.83	228.6	209.0	3	0.91	228.6	104.5
89	8	2.44	182.9	390.2	5	1.52	182.9	223.0
90	8	2.44	182.9	446.0	5	1.52	182.9	278.7
91	8	2.44	182.9	446.0	5	1.52	182.9	278.7
92	8	2.44	182.9	446.0	5	1.52	182.9	278.7
93	8	2.44	182.9	446.0	12	3.66	182.9	473.9
94	6	1.83	182.9	390.2	6	1.83	182.9	501.7
95	6	1.83	182.9	334.5	6	1.83	182.9	334.5
96	6	1.83	182.9	334.5	0	0.00	182.9	167.2
97	7	2.13	182.9	362.4				
98	9	2.74	182.9	446.0				
99	7	2.13	182.9	446.0				
100	6	1.83	182.9	362.4				
101	5	1.52	182.9	306.6				
102	8	2.44	182.9	362.4				
103	8	2.44	182.9	446.0				
104	5	1.52	182.9	362.4				
105	0	0.00	182.9	139.4				
106								

```

107
108
109 transect a
110     depth
111 (ft)  (m)  distance(m)  area(m2)
112
113   0    0.00
114  16    4.88      182.9    446.0
115   0    0.00      182.9    446.0
116
117
118 calculation of transect 9 to 10
119 total area of rectangle enclosing water:
      L      W      area m2
      2651.8  914.4      = 2424805.9
total area of triangles of land
      1691.6  1828.8  /2  = 1546799
      731.5   731.5  /2  = 267546.1
                                = 1814345.1
                                total

remainder is water: 610460.8
approx. 1/3 is 9.1m in depth: 203486.9
approx. 2/3 is 5.5m depth and less 406973.9

```

B5. Calculation of Albemarle Sound volume by transects.

CALCULATION OF ALBEMARLE SOUND VOLUME BY TRANSECT

transects	block	area	distance	factor	volume
a-1	1	1546.7	594.4	0.25	229839.6
a-1	2	961.6	3657.6		3517148.2
a-1	3	1003.4	3657.6	0.5	1835017.9
1-2	1	1491.2	3657.6	0.25	1363553.3
1-2	2	3205.6	3657.6		11724802.6
1-2	3	1979.2	1100	0.25	544280.0
2-3	1	6682.1	3657.6		24440449.0
	2	7107.1	3657.6	0.25	6498732.2
	3	209	1500	0.25	78375.0
3-4	1	19718.7	3657.6		72123117.1
	2	1672.3	3657.6	0.25	1529151.1
	3	348.4	3657.6	0.25	318577.0
4-5	1	37625.6	3657.6		137619394.6
	2	1950.9	3657.6	0.25	1783903.0
	3	17349.7	3657.6	0.25	15864565.7
5-6	1	79014.5	3657.6		289003435.2
	2	557.4	3657.6	0.5	1019373.1
6-7	1	46210	3657.6		169017696.0
	2	7943.2	3657.6	0.5	14526524.2
	3	19788.6	3657.6	0.5	36189391.7
7-8	1	29543.2	3657.6		108057208.3
	2	8430.9	3657.6		30836859.8
	3	2173.9	3657.6	0.25	1987814.2
8-8a	1	17168.5	1828.8		31397752.8
	2	3734.7	1828.8	0.5	3415009.7
8a-9	1	12820.7	640	0.5	4102624.0
	2	4347.8	640	0.5	1391296.0
subtotal					970415891.1
9-10					
	approx. 1/3 is 9.1m depth:			203486.9	1851730.8
	approx. 2/3 is 5.5m and less:				
	calc.: 406973.9	5.5	0.5		1119178.2
total volume of transects 9-10:					2970909.0
total volume of Albemarle Sound study area:					973386800.12