

INTRODUCTION

Boundaries and areas for drainage basins are necessary for predicting rainfall runoff; bridge openings and culvert dimensions; possible sources of sedimentation or contamination; sewage loads; and other water-related phenomena. The large map (fig. 1) depicts the general boundaries and areas for the drainage basins in St. Johns County.

St. Johns County, in northeastern Florida, is bound by the St. Johns River, the Atlantic Ocean, and Duval, Clay, Putnam, and Flagler Counties. The county has an area of approximately 673 square miles of which about 60 square miles are open water. Of the 60 square miles of open water, about 41 are that part of the St. Johns River inside the county line. 14 are Intracoastal Waterway, and the remaining 5 square miles are lakes, borrow pits, and streams.

About two-thirds of the county, 419 square miles, is drained by the St. Johns River and is in hydrologic unit 03080103. The St. Johns River below the Oklawaha River. The remaining one-third of the county, 254 square miles, is drained by numerous small streams that empty into the Intracoastal Waterway and Atlantic Ocean and is located in hydrologic unit 03080201. Coastal areas between St. Johns River and Ponce de Leon Inlet (fig. 2). The hydrologic unit system is used by many governmental agencies to classify and store water-related data. The boundaries of hydrologic units generally coincide with the boundaries of major river basins, but also can encompass bay drainages, coastal drainage, or other convenient subdivisions. An explanation of the hydrologic unit system can be found in "River basin and hydrologic unit map of Florida," by Conover and Leach (1976).

DRAINAGE AREAS

This map delineates 80 drainage basins or equivalent areas. A drainage basin consists of a surface stream, its tributaries, and the surrounding lands that these streams drain. Drainage basins are bounded by drainage divides, either natural ridges or cultural features such as roads, railroads, or levees, that separate adjacent stream drainage systems. A few of the 80 areas outlined on the map are not drainage basins as described above, but, for convenience, the beach area and some ditches and canals (including the Intracoastal Waterway) are treated as drainage basins. A few poorly defined areas that drain into the St. Johns River could not be adequately delineated. The basin boundary, also called a watershed or basin divide, can be sharply defined in hilly terrain. In flat areas, however, and in areas where the divide is altered by man or nature. The highest points in St. Johns County are only slightly higher than 65 feet, close to the lockout tower near Durbin in the north St. Johns County, and set, about 2 miles east of Spuds at an airstrip in south St. Johns County. One result of this slight relief is that the drainage divides are indistinct and low enough to be inundated during floods, thus, water occasionally moves from one drainage system to another across the divide. Another result is that cultural or manmade structures such as roads, ditches, levees, and railroad grades are more likely to influence drainage patterns.

The drainage basins and equivalent areas in St. Johns County delineated on this map were determined by the use of an electronic planimeter on 7.5-minute, 1:24,000 scale U.S. Geological Survey topographic maps. Table 1 lists areas of individual map segments by a number on the map and by the name of the principal stream in the segment. Only the area within each individual segment is given in table 1. The area for the segment may or may not coincide with the drainage area of a basin. The drainage basin for a larger stream can contain basins for tributaries, and the drainage area will include the areas for those contributing basins plus any intervening area. For example, Molasses Branch (map segment 26) flows into Trout Creek (map segment 26) which flows into Sixmile Creek (map segment 27). The drainage area for Sixmile Creek, therefore, includes the drainage area for Trout Creek which in turn contains the drainage area for Molasses Branch. Sixmile Creek's drainage area also includes the drainage area of other tributaries. This hierarchy of stream order and the areas of each drainage basin are shown in table 2. Table 2 lists areas of drainage basins. The stream that drains that basin is named and the name is indented if the stream is a tributary to a stream that is listed above it. The drainage area for the larger stream includes the drainage area of all tributaries; all the segments in table 1 that are included in the area are listed in the last column. Only the drainage area within the county is shown in the table. A footnote indicates if the stream has part of its area outside the county boundary. The table lists the streams in order from most upstream to most downstream within the hydrologic unit.

Drainage areas may be revised periodically as more detailed information becomes available or as development changes the drainage patterns in a basin. Drainage areas at U.S. Geological Survey gaging stations are included in the Survey's annual water-data report, "Water resources data for Florida" (U.S. Geological Survey, 19xx) and in the report "Drainage areas of selected surface-water sites in Florida" (Foote, 1981). A similar drainage basin map for Duval County has been compiled by Stone and Largent (1983). The total area of the county in the combined area of the segments. It is also shown in table 3 as the combined area of the county on the individual 7.5-minute, 1:24,000 scale U.S. Geological Survey topographic maps (fig. 1). The 672.93 square-mile area for the combined segments and the 672.6 square-mile area for the maps agree within the limits of rounding figures.

REFERENCES

- Conover, C.S., and Leach, S.D., 1975, River basin and hydrologic unit map of Florida: Florida Bureau of Geology Map Series 72.
- Foote, D.W., 1981, Drainage areas of selected surface-water sites in Florida: U.S. Geological Survey Open-File Report 81-482, 83 p.
- Stone, R.B., and Largent, J.B., 1983, Drainage basins in Duval County, Florida: U.S. Geological Survey Water-Resources Investigations Report 82-4069, 1 sheet.
- U.S. Geological Survey, 19xx, Water resources data for Florida, water year 19xx, Volume 1: U.S. Geological Survey Water-Data Reports FL-xx (published annually).

Table 1.—Areas of individual map segments

Map Segment No.	(square miles)	Name of principal stream in segment
1	24.42	St. Regis main canal
2	4.2	Hell Cat Bay
3	2.00	Drainage ditch at river mile 10.7
4	18.23	Sixmile Creek
5	1.05	Drainage ditch at river mile 8.1
6	5.86	Drainage ditch at river mile 8.3
7	2.07	Drainage ditch at river mile 7.3
8	1.56	Drainage ditch at river mile 6.7
9	2.53	Drainage ditch at river mile 6.0
10	.98	Drainage ditch at river mile 5.3
11	.42	Drainage ditch
12	1.77	Drainage ditch
13	9.24	Cracker Branch
14	21.64	Deep Creek
15	22.10	Moccasin Branch
16	11.02	Messurey Road drainage network
17	22.59	McCullough Creek
18	22.86	Toco Creek
19	40.99	Turnbull Creek (Sixmile Creek above Town Branch)
20	5.33	Town Branch
21	10.91	Mill Creek
22	2.97	Tributary to Sixmile Creek
23	6.98	Tributary to Sixmile Creek
24	1.89	Trout Creek tributary
25	2.09	Molasses Branch
26	25.34	Trout Creek
27	17.83	Sixmile Creek
28	1.19	St. Johns River tributary
29	.37	St. Johns River tributary
30	.84	St. Johns River tributary
31	3.48	Kendall Creek
32	1.72	Orange Grove Branch
33	.78	St. Johns River tributary at Hallowes Cove
34	1.98	Kentucky Branch
35	.85	South Switzerland Branch
36	.30	Kendall Creek
37	.90	North Switzerland Branch
38	1.00	Big Lige Branch
39	.84	Kentucky Branch
40	5.71	Big Lige Branch
41	5.92	Cunningham Creek
42	12.87	Sampson Creek
43	5.78	Bowen Branch
44	12.89	Durbin Creek
45	2.31	Flora Branch
46	2.08	Jullington Creek
47	62.38	St. Johns River (open water and intervening)
48	.76	Pablo Creek at Intracoastal Waterway
49	.92	Box Branch
50	5.68	Cabbage Creek
51	.38	Cut Creek
52	8.45	Intracoastal Waterway (St. Johns River basin)
53	.99	Swamp drain near Palm Valley Landing
54	6.64	Swamp drain at Palm Valley Bridge
55	5.97	Smith Creek
56	10.13	Deep Creek
57	1.48	Marshall Creek
58	7.93	Stokes Creek
59	1.76	Lake Vedra
60	3.19	Diego Plains
61	1.00	Lake Ponte Vedra
62	7.03	Guana River
63	37.92	Intracoastal Waterway—Tolomato River
64	3.28	Dave Branch
65	4.47	Fish Swamp drain
66	6.60	Stevens Branch
67	1.95	Schoolhouse Branch
68	13.12	Cracker Branch
69	3.83	Pellicer Creek (unnamed tributary)
70	3.43	Pellicer Creek
71	5.76	Cedar Landing Creek
72	15.97	Moose Creek
73	46.24	Moultrie Creek
74	12.92	Red House Branch
75	1.54	Oyster Creek
76	10.15	San Sebastian River
77	32.85	Intracoastal Waterway—Matanzas River
78	3.20	Salt Run
79	.84	St. Augustine Inlet
80	4.03	Beach area (direct runoff to ocean)
	672.93	Total

Table 2.—Areas of drainage basins in St. Johns County

Name of principal stream in basin and relationship to other streams	Drainage area, square miles	Map segment included in drainage area
Hydrologic unit 03080103: St. Johns River below Oklawaha River		
Area of unit within St. Johns County 419 square miles		
Includes map segments 1 through 32		
St. Johns River (area within county, including surface of river but excluding Intracoastal Waterway)	403	1-47
Crescent Lake		
Salt Creek	1,244.4	1
St. Regis main canal	2.0	2
Dunes Creek	1.5	2
Hell Cat Bay	4.2	3
Deep Creek	21.64	3-14
Drainage ditch at river mile 10.7	2.00	3
Sixmile Creek	18.23	4
Drainage ditch at river mile 8.3	1.05	5
Drainage ditch at river mile 8.1	5.86	6
Drainage ditch at river mile 7.3	2.07	7
Drainage ditch at river mile 6.7	1.56	8
Drainage ditch at river mile 6.0	2.53	9
Drainage ditch at river mile 5.3	.98	10
Deep Creek slough	.42	11
Drainage ditch	.42	11
Drainage ditch	1.77	12
Cracker Branch	9.24	13
Moccasin Branch	22.1	15
Messurey Road drainage network	11.0	16
Trout Creek tributary	22.6	17
Toco Creek	22.9	18
Turnbull Creek	41.0	19-27
Turnbull Creek (Sixmile Creek above Town Branch)	11.0	19
Town Branch	5.33	20
Mill Creek	10.91	21
Tributary to Sixmile Creek	2.97	22
Tributary to Sixmile Creek	6.98	23
Trout Creek tributary	1.89	24
Molasses Branch	2.09	25
Trout Creek	25.34	26
Sixmile Creek	17.83	27
St. Johns River tributary	1.19	28
St. Johns River tributary	10.9	29
Tributary to Sixmile Creek	2.97	32
Tributary to Sixmile Creek	6.98	33
Toco Creek	22.9	34
Trout Creek tributary	1.89	34
Orange Grove Branch	1.72	32
St. Johns River tributary at Hallowes Cove	2.09	33
Combined area of minor tributaries	12.4	28-37
St. Johns River tributary	1.19	28
St. Johns River tributary	10.9	29
St. Johns River tributary	2.97	32
St. Johns River tributary	6.98	33
Middle Switzerland Branch	2.93	34
Orange Grove Branch	1.72	32
St. Johns River tributary at Hallowes Cove	2.09	33
Kentucky Branch	1.98	34
South Switzerland Branch	.85	35
Kendall Creek	.30	36
North Switzerland Branch	.90	37
Big Lige Branch	1.00	38
Kentucky Branch	.84	39
Big Lige Branch	.84	39
North Switzerland Branch	.90	37
Cunningham Creek	5.92	41
Sampson Creek	12.87	42
Bowen Branch	5.78	43
Durbin Creek	12.89	44
Flora Branch	2.31	45
Jullington Creek	2.08	46
St. Johns River (open water and intervening)	62.38	47
Pablo Creek at Intracoastal Waterway	.76	48
Box Branch	.92	49
Cabbage Creek	5.68	50
Cut Creek	.38	51
Intracoastal Waterway	8.45	52
Swamp drain near Palm Valley Landing	.99	53
Swamp drain at Palm Valley Bridge	6.64	54
Smith Creek	5.97	55
Deep Creek	10.13	56
Marshall Creek	1.48	57
Stokes Creek	7.93	58
Lake Vedra	1.76	59
Diego Plains	3.19	60
Lake Ponte Vedra	1.00	61
Guana River	7.03	62
Intracoastal Waterway—Tolomato River	37.92	63
Dave Branch	4.96	64
Fish Swamp drain	4.47	65
Stevens Branch	6.60	66
Schoolhouse Branch	1.95	67
Cracker Branch	13.12	68
Pellicer Creek (unnamed tributary)	3.83	69
Pellicer Creek	3.43	70
Cedar Landing Creek	5.76	71
Moose Creek	15.97	72
Moultrie Creek	46.24	73
Red House Branch	12.92	74
Oyster Creek	1.54	75
San Sebastian River	10.15	76
Intracoastal Waterway—Matanzas River	32.85	77
Salt Run	3.20	78
St. Augustine Inlet	.84	79
Beach area (direct runoff to ocean)	4.03	80
Hydrologic unit 03080201: Coastal area between St. Johns River and Ponce de Leon Inlet		
Area of unit within St. Johns County 254 square miles		
Includes map segments 33 through 80		
Intracoastal Waterway—Tolomato River	84.0	53-63
Swamp drain near Palm Valley Landing	.99	54
Swamp drain at Palm Valley Bridge	6.64	54
Smith Creek	5.97	55
Deep Creek	10.1	56
Marshall Creek	1.48	57
Stokes Creek	7.93	58
Lake Vedra	1.76	59
Diego Plains	3.19	60
Lake Ponte Vedra	1.00	61
Guana River	7.03	62
Intracoastal Waterway—Matanzas River	32.85	64-77
Pellicer Creek	3.28	64
Dave Branch	4.47	65
Fish Swamp drain	6.60	66
Stevens Branch	6.60	66
Schoolhouse Branch	1.95	67
Cracker Branch	13.12	68
Pellicer Creek (unnamed tributary)	3.83	69
Pellicer Creek	3.43	70
Cedar Landing Creek	5.76	71
Moose Creek	16.0	72
Moultrie Creek	46.2	73
San Sebastian River	24.4	74-76
Red House Branch	12.9	74
Oyster Creek	1.54	75
Salt Run	3.20	78
St. Augustine Inlet	.84	79
Beach area (direct runoff to ocean)	4.03	80
Not determined to mouth of principal stream in basin.		
Additional area for this basin outside St. Johns County.		
About 3 square miles are noncontributing.		

Table 3.—Area of St. Johns County, by quadrangles

U.S. Geological Survey quadrangle	Area in county (square miles)
Jacksonville Beach	0.6
Orange Park	.3
Bayard	.8
Palm Valley	31.0
Mickler Landing	6.5
Fleming Island	29.6
Orangedale	60.0
Durbin	58.9
South Ponte Vedra Beach	22.2
Green Cove Springs	1.3
Picolata	55.9
Bakersville	64.6
St. Augustine	41.0
Riverdale	34.0
Elkton	64.6
St. Augustine Beach	59.4
Hastings	12.7
Spuds	64.7
Dinner Island NE	55.8
Matanzas Inlet	7.7
San Mateo	.3
Dinner Island	.7
Espanola	.0
	672.6

For additional information write to:
District Chief
U.S. Geological Survey
Suite 3015
227 North Bronough Street
Tallahassee, Florida 32301

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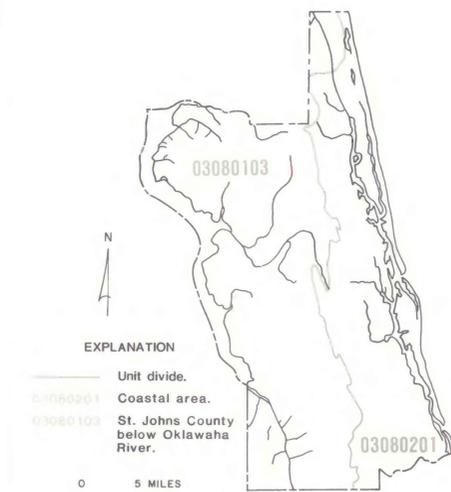


Figure 2.—Hydrologic units in St. Johns County.

EXPLANATION

- Unit divide.
- Coastal area.
- St. Johns County below Oklawaha River.

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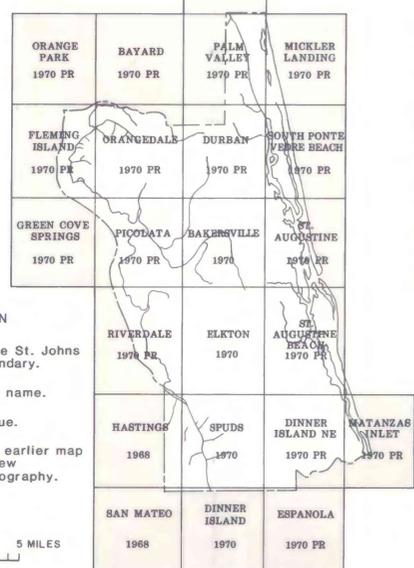


Figure 3.—U.S. Geological Survey 1:24,000 scale topographic maps that include St. Johns County.

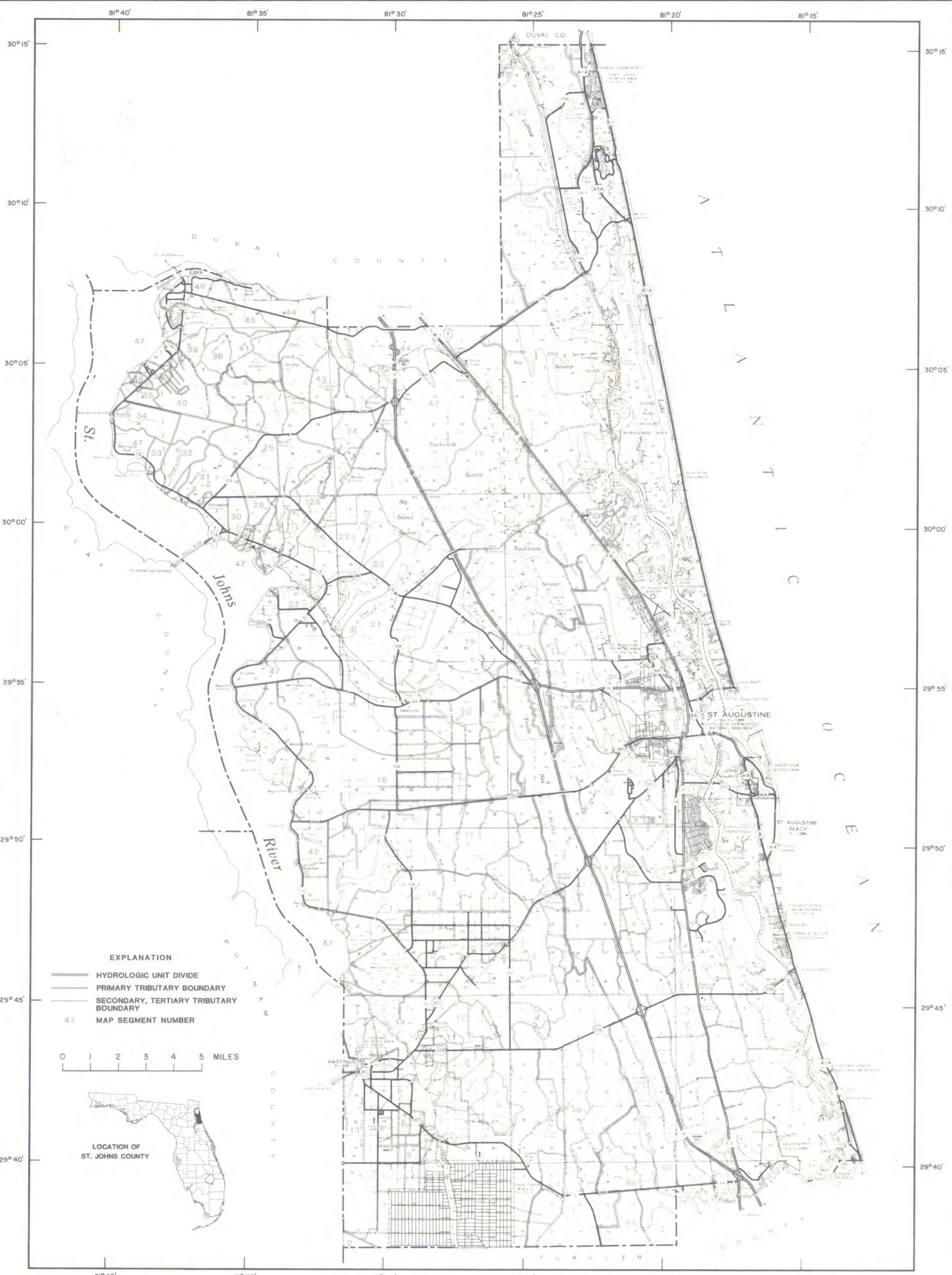


Figure 1.—Drainage basins in St. Johns County.