

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ESTIMATED AREAS AND VOLUMES OF SEDIMENTARY ROCK
IN THE UNITED STATES BY PROVINCE--STATISTICAL
BACKGROUND DATA FOR U.S. GEOLOGICAL SURVEY CIRCULAR 860

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Open-File Report 82-666C

This report is preliminary and has not been reviewed for conformity with
U.S. Geological Survey editorial standards

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INTRODUCTION

Areas of provinces and areas and volumes of sedimentary rock in each were determined for the recent study "Estimates of undiscovered recoverable conventional resources of oil and gas in the United States," published as U.S. Geological Survey Circular 860 by Dolton and others (1981). Because only regional totals of these were included in that report, the areas and volumes for each province are tabulated here.

All sedimentary rocks were included, with the exception of rocks that are deformed or altered to the point of being nonprospective for oil or gas and rocks that are deeper than 30,000 feet. Volumes of igneous rocks were included where they occur as incidental interlayers and intrusions in sedimentary sequences or where they may be prospective. Areas and volumes of sedimentary rocks are not reported in parts of interior Alaska (Yukon-Porcupine, Yukon-Koyukuk, Interior Lowlands, Kodiak Island, Southeastern Alaska provinces), the Basin and Range, and eastern Oregon-Washington, where the sedimentary rock distribution is too poorly known to estimate accurately. Also excluded in a few provinces were deeply buried sedimentary units, such as the pre-Mesozoic rocks of the Gulf Coast, where data do not adequately define their distribution.

Areas and volumes were derived primarily by planimetry of isopach maps and the application of standard formulae for the volume of a frustum.

The United States has not resolved its offshore boundaries with other States concerned. The lines on this chart are for purposes of illustration only, and do not necessarily reflect the position or views of the United States with respect to the boundary involved.

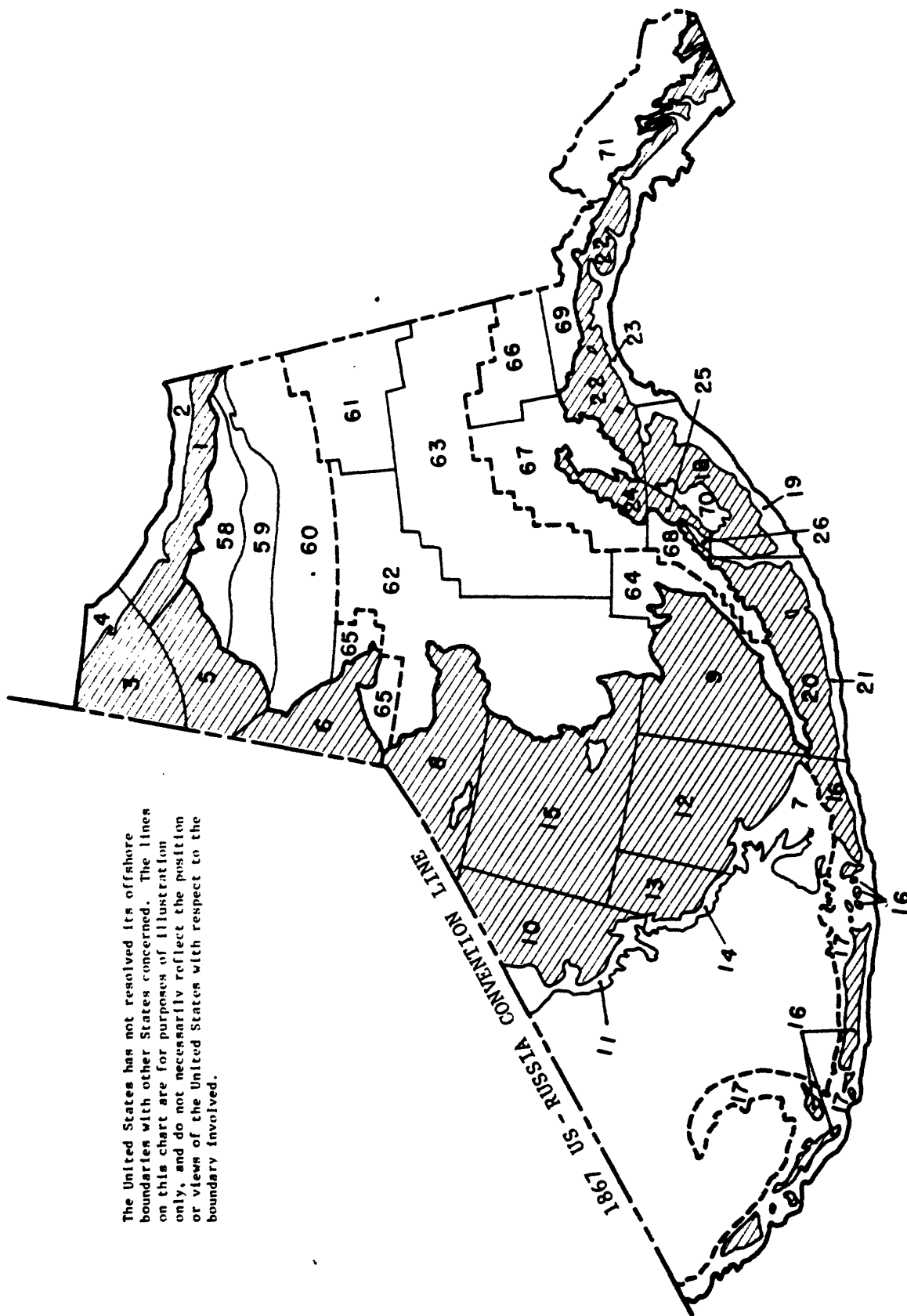


Figure 1.--Index map of Alaska showing provinces assessed. Shading denotes offshore shelf areas; names of provinces are listed by number in the table.

Figures 1 and 2 are small-scale index maps of the provinces. Larger scale maps are available as Open-File Report 81-84A, B, and C (Varnes, Dolton, and McMullin, 1981; Varnes, Dolton, and others, 1981; Varnes, Coury, and others, 1981).

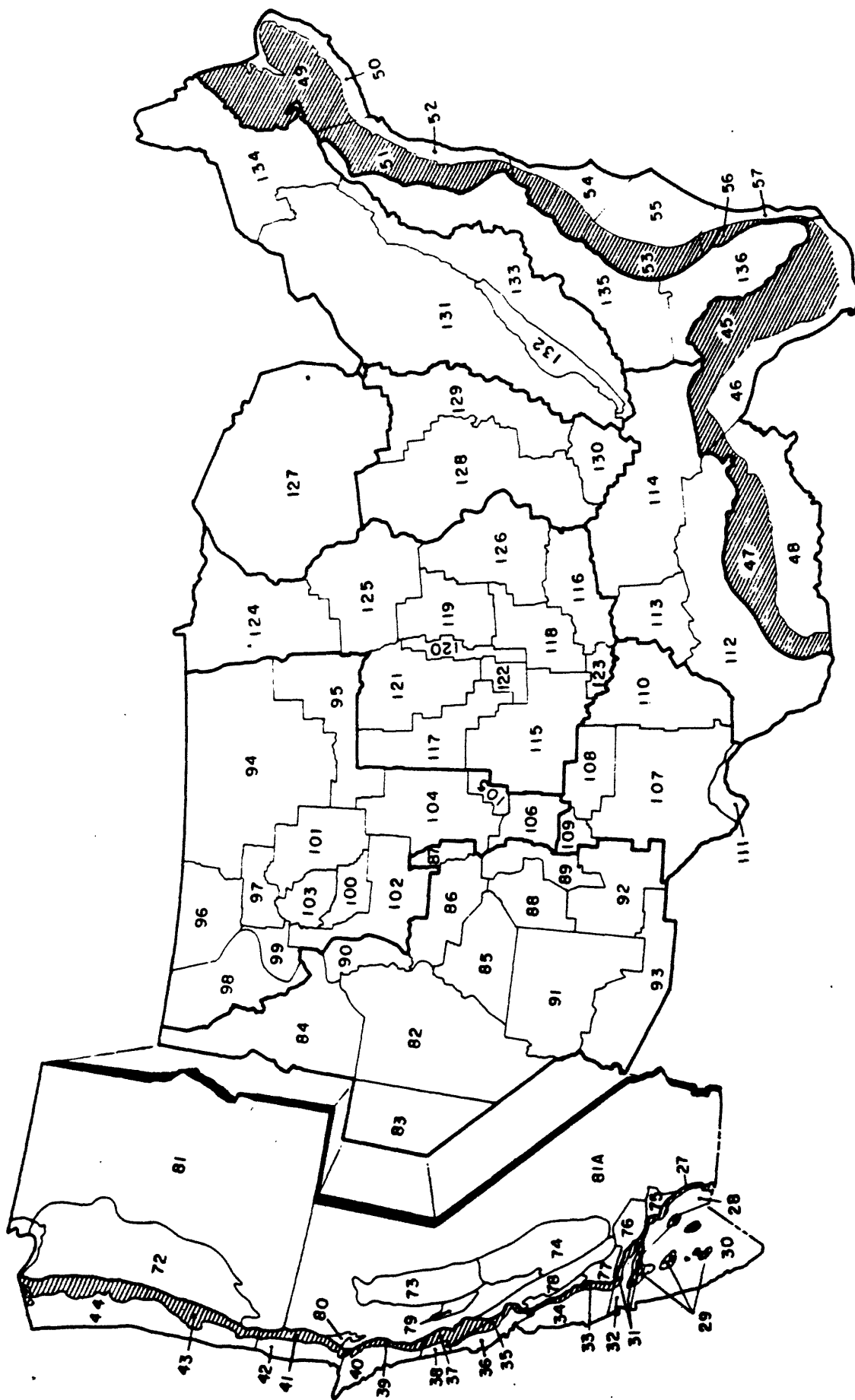


Figure 2.--Index map of lower 48 States showing provinces assessed. Shading denotes offshore shelf areas; names of provinces are listed by number in table.

Region and province	Total province		Sedimentary rock			
	Area		Area		Volume	
	mi ²	km ²	mi ²	km ²	mi ³	km ³
1A. Alaska						
1. Beaufort Shelf	26000	66000	26000	66000	82000	343000
2. Beaufort Slope	15000	39000	15000	39000	80000	332000
3. North Chukchi Shelf	29000	76000	29000	76000	55000	227000
4. North Chukchi Slope	5300	14000	5300	14000	21000	86000
5. Central Chukchi	31000	81000	31000	81000	70000	294000
6. Hope Basin	27000	70000	27000	70000	18000	76000
7. Umnak Plateau	23000	59000	23000	59000	42000	175000
8. Norton Basin	43000	112000	43000	112000	28000	119000
9. Bristol Basin	55000	142000	55000	142000	37000	155000
10. Navarin Basin Shelf	38000	99000	38000	99000	66000	275000
11. Navarin Basin Slope	11000	28000	11000	28000	11000	44000
12. St. George Basin	55000	143000	55000	143000	43000	178000
13. Zhemchug Shelf	18000	45000	18000	45000	6700	28000
14. Zhemchug Slope	4300	11000	4300	11000	4200	17000
15. St. Matthew-Hall Basin	91000	236000	89000	231000	18000	76000
16. Aleutian Shelf	23000	59000	19000	49000	5900	25000
17. Aleutian Slope	62000	161000	62000	161000	23000	95000
18. Kodiak Shelf	22000	57000	22000	57000	66000	275000
19. Kodiak Slope	15000	39000	15000	39000	45000	189000
20. Shumagin Shelf	29000	75000	29000	75000	26000	108000
21. Shumagin Slope	10000	26000	10000	26000	30000	126000
22. Gulf of Alaska Shelf	33000	86000	33000	86000	100000	417000
23. Gulf of Alaska Slope	22000	58000	22000	58000	16000	65000
24. Cook Inlet	7500	19000	7400	19000	23000	97000
25. Shelikof Strait Shallow	4100	11000	4100	11000	11000	46000
26. Shelikof Strait Deep	1600	4000	1600	4000	5700	24000
2A. Pacific Coast Offshore						
27. Inner Basins Shallow	850	2200	850	2200	630	2600
28. Inner Basins Deep	3600	9400	3600	9300	1900	7900
29. Outer Basins and Ridges Shallow	1400	3600	1200	3100	1300	5400
30. Outer Basins and Ridges Deep	18000	47000	18000	47000	13000	53000
31. Santa Barbara Channel Shelf	1300	3500	1300	3200	4500	19000
32. Santa Barbara Channel Deep	2400	6200	2400	6200	5100	21000
33. Santa Maria Shelf	980	2500	980	2500	450	1900
34. Santa Maria Slope	6800	18000	4800	12000	2000	8300

Region and province	Total province		Sedimentary rock			
	Area		Area		Volume	
	mi ²	km ²	mi ²	km ²	mi ³	km ³
35. Santa Cruz Shelf	1100	2900	1100	2900	760	3200
36. Santa Cruz Slope	3100	7900	2200	5700	1500	6400
37. Bodega Shelf	2200	5800	2100	5300	2400	10000
38. Bodega Slope	900	2300	900	2300	500	2100
39. Point Arena Shelf	1200	3100	710	1800	440	1800
40. Point Arena Slope	4900	13000	4900	13000	5000	21000
41. Eel River Shelf	1400	3500	1400	3500	1100	4700
42. Eel River Slope	4000	10000	4000	10000	3800	16000
43. Oregon-Washington Shelf	9600	25000	9600	25000	23000	97000
44. Oregon-Washington Slope	18000	45000	18000	45000	44000	183000
6A. Gulf of Mexico						
45. Eastern Gulf Shelf	72000	186000	72000	186000	335000	1397000
46. Eastern Gulf Slope	34000	87000	34000	87000	151000	627000
47. Western Gulf Shelf	53000	137000	53000	137000	300000	1249000
48. Western Gulf Slope	61000	159000	61000	159000	335000	1395000
11A. Atlantic Coast						
49. North Atlantic Shelf	56000	144000	28000	73000	74000	310000
50. North Atlantic Slope	14000	37000	14000	37000	50000	208000
51. Mid-Atlantic Shelf	33000	86000	33000	86000	99000	413000
52. Mid-Atlantic Slope	12000	32000	12000	32000	71000	295000
53. South Atlantic Shelf	38000	100000	38000	100000	57000	239000
54. Carolina Trough	18000	47000	18000	47000	82000	341000
55. Blake Plateau	32000	82000	32000	82000	139000	578000
56. Southeast Florida Shelf	6100	16000	6100	16000	14000	58000
57. Florida Straits	6900	18000	6900	18000	26000	110000
1. Alaska Onshore						
58. Arctic Coastal Plain	26000	66000	26000	66000	65000	271000
59. Northern Foothills	29000	75000	29000	75000	139000	581000
60. Southern Foothills and Brooks Range	45000	117000	45000	117000	168000	698000
61. Yukon-Porcupine Basins ¹	38000	99000	—	—	—	—
62. Yukon-Koyukuk Basins	129000	335000	—	—	—	—
63. Interior Lowlands	105000	271000	—	—	—	—
64. Bristol Basin Onshore	22000	57000	11000	30000	19000	79000
65. Hope Basin Onshore	15000	56000	6300	16000	2700	11000
66. Copper River Basin	25000	65000	3400	8800	3200	13000
67. Cook Inlet Onshore	46000	118000	12000	32000	35000	144000
68. Alaska Peninsula	13000	33000	13000	33000	36000	149000
69. Gulf of Alaska Onshore	15000	38000	4500	12000	11000	46000
70. Kodiak Island	5300	14000	0	0	0	0
71. Southeastern Alaska ²	35000	90000	—	—	—	—

Region and province	Total province		Sedimentary rock			
	Area		Area		Volume	
	mi ²	km ²	mi ²	km ²	mi ³	km ³
2. Pacific Coast						
72. Western Oregon-Washington	35000	90000	35000	90000	47000	197000
73. Sacramento Basin	12000	30000	12000	30000	30000	124000
74. San Joaquin Basin	14000	37000	14000	37000	30000	126000
75. Los Angeles Basin	1800	4900	1500	3900	3900	16000
76. Ventura Basin	3900	10000	2400	6200	8600	36000
77. Santa Maria Basin	2700	7100	1500	4000	1100	4700
78. Central Coastal Basins	5900	15400	4200	11000	4900	21000
79. Sonoma-Livermore Basin	930	2400	930	2400	1300	5400
80. Humboldt Basin	1100	2900	380	980	280	1200
81. Eastern Oregon-Washington ²	100000	259000	--	--	--	--
3. Colorado Plateau and Basin and Range						
82. Eastern Basin and Range ²	109000	282000	--	--	--	--
83. Western Basin and Range ²	44000	114000	--	--	--	--
84. Idaho-Snake River Downwarp ²	72000	188000	--	--	--	--
85. Paradox Basin	34000	87000	34000	87000	66000	273000
86. Uinta-Piceance-Eagle Basins	40000	104000	40000	104000	116000	483000
87. Park Basins	6800	18000	2300	5900	2600	11000
88. San Juan Basin	22000	58000	20000	53000	30000	126000
89. Albuquerque-Santa Fe-San Luis Rift Basins	18000	45000	16000	41000	42000	177000
90. Wyoming-Utah-Idaho Overthrust Belt	15000	39000	15000	39000	85000	353000
91. Northern Arizona	72000	187000	55000	144000	40000	168000
92. South-central New Mexico	42000	110000	34000	89000	32000	131000
93. Southern Arizona-Southwestern New Mexico	50000	130000	44000	113000	50000	209000
4. Rocky Mountains and Northern Great Plains						
94. Williston Basin	143000	369000	142000	367000	202000	841000
95. Sioux Arch	49000	127000	46000	118000	17000	71000
96. Sweetgrass Arch	34000	89000	34000	89000	36000	150000
97. Central Montana	16000	41000	15000	40000	22000	93000
98. Montana Overthrust Belt	43000	111000	16000	41000	26000	110000
99. Southwestern Montana	11000	27000	4100	11000	5800	24000
100. Wind River Basin	13000	33000	11000	28000	21000	86000
101. Powder River Basin	35000	91000	34000	87000	60000	252000
102. Southwestern Wyoming Basins	43000	112000	34000	87000	96000	399000
103. Big Horn Basin	15000	38000	11000	28000	18000	74000
104. Denver Basin	50000	131000	44000	115000	68000	281000
105. Las Animas Arch	6400	17000	6400	17000	6900	29000
106. Raton Basin-Sierra Grande Uplift	19000	49000	18000	46000	12000	52000

Region and province	Total province		Sedimentary rock			
	Area		Area		Volume	
	mi ²	km ²	mi ²	km ²	mi ³	km ³
5. West Texas and Eastern New Mexico						
107. Permian Basin	86000	222000	86000	222000	171000	713000
108. Palo Duro Basin	22000	58000	22000	58000	30000	126000
109. Pedernal Uplift	7700	20000	7600	20000	4600	19000
110. Bend Arch-Forth Worth Basin	54000	139000	49000	126000	58000	242000
111. Marathon Fold Belt	8000	20000	8000	20000	30000	125000
6. Gulf Coast						
112. Western Gulf Basin	108000	281000	108000	281000	471000	1964000 ³
113. East Texas Basin	31000	79000	31000	79000	68000	284000
114. Louisiana-Mississippi Salt Basins	98000	255000	98000	255000	244000	1015000
7. Mid-continent						
115. Anadarko Basin	58000	150000	58000	150000	109000	456000
116. Arkoma Basin	34000	88000	24000	61000	47000	197000
117. Cambridge Arch-Central Kansas Uplift	41000	107000	41000	107000	34000	144000
118. Cherokee Platform	30000	77000	30000	77000	17000	72000
119. Forest City Basin	33000	86000	33000	86000	19000	77000
120. Nemaha Ridge	11000	28000	11000	28000	5200	22000
121. Salina Basin	44000	115000	44000	115000	26000	109000
122. Sedgwick Basin	8500	22000	8500	22000	8000	33000
123. Southern Oklahoma	7000	18000	6700	17000	14000	57000
124. Sioux Uplift	77000	199000	34000	88000	2700	11000
125. Iowa Shelf	58000	151000	58000	151000	27000	112000
126. Ozark Uplift	53000	136000	53000	136000	22000	92000
8. Michigan Basin						
127. Michigan Basin	164000	425000	122000	316000	109000	455000

Region and province	Total province		Sedimentary rock			
	Area		Area		Volume	
	mi ²	km ²	mi ²	km ²	mi ³	km ³
9. Eastern Interior						
128. Illinois Basin	108000	280000	108000	280000	140000	583000
129. Cincinnati Arch	65000	168000	65000	168000	61000	252000
130. Black Warrior Basin	20000	53000	20000	53000	40000	165000
10. Appalachians						
131. Appalachian Basin	181000	469000	172000	446000	444000	1850000
132. Blue Ridge Overthrust Belt	21000	53000	21000	53000	49000	204000
133. Piedmont	73000	190000	0	0	0	0
134. New England-Adirondack	83000	215000	0	0	0	0
11. Atlantic Coast						
135. Atlantic Coastal Plain	108000	280000	101000	262000	52000	215000
136. Florida Peninsula	53000	137000	53000	137000	89000	370000

FOOTNOTES

- 1/ Overall distribution of sedimentary rocks is too poorly known to estimate accurately, however, the areas and volumes of specific small basins within the province were roughly estimated for appraisal purposes.
- 2/ Distribution of sedimentary rocks too poorly known to estimate accurately.
- 3/ Excludes volumes of pre-Mesozoic rocks.

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