Corps/EPA Compensatory Mitigation Rule: Complex Issues

Regulatory Branch
U.S. Army Corps of Engineers

Office of Wetlands, Oceans and Watersheds
U.S. Environmental Protection Agency

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Topics

- Service areas for third party mitigation
- Site protection
- Financial assurances
- Long-term management
- Adaptive management
- Catastrophic events

Service Areas

"…watershed, ecoregion, physiographic province, and/or other geographic area within which the mitigation bank or in-lieu fee program is authorized to provide compensatory mitigation …"

(33 CFR 332.8/40 CFR 230.98)

Service Areas

- *Scale:*

  "…appropriately sized to ensure that the aquatic resources provided will effectively compensate for adverse environmental impacts across the entire service area."

- *Examples:*
  - In urban areas, an 8-digit HUC watershed or smaller may be appropriate.
  - In rural areas, several contiguous 8-digit HUCs or a 6-digit HUC watershed may be appropriate.

Service Areas

Considerations

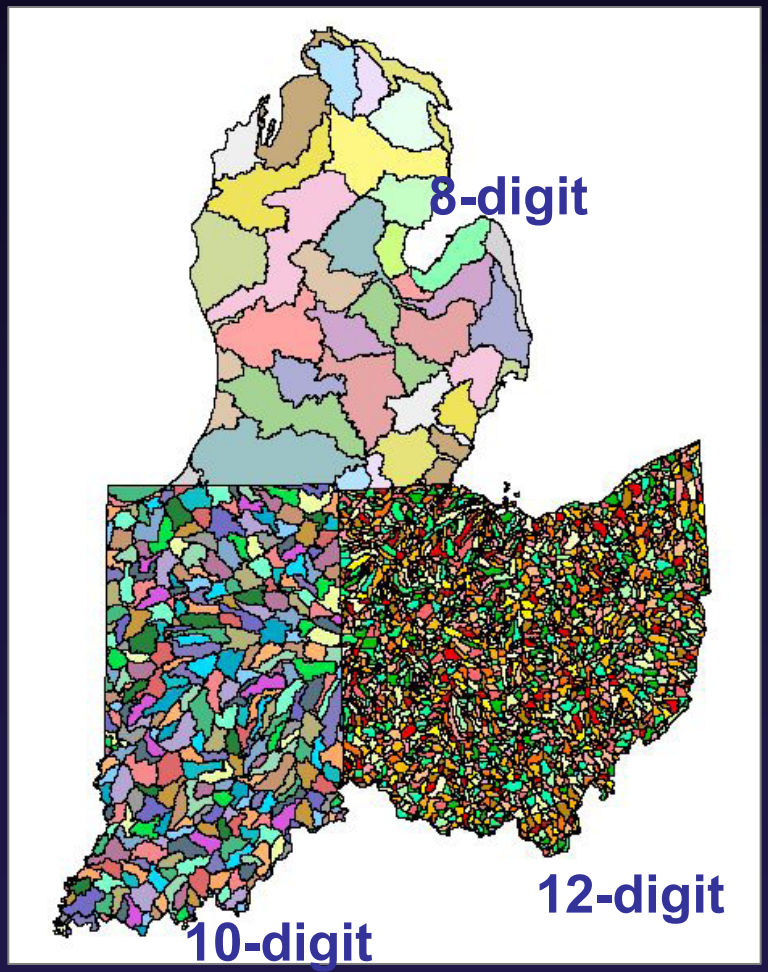
- "… locally-developed standards and criteria..."
- "…economic viability of … bank or in-lieu fee program may also be considered in determining the size of the service areas."
- "…basis for determining service area must be documented in writing and referenced in the mitigation banking instrument."
- "…where watershed boundaries do not exist, such as marine areas…appropriate spatial scale should be used to replace lost functions and services within the same ecological system (e.g., reef complex, littoral drift cell)."

Service Areas

Problems

- "Watershed" & "geographic area" have no set scale.
- HUCs, political & ecoregion boundaries can be very large or very small, unrelated to aquatic resources.
- In some areas, watersheds are difficult to define

Watershed Boundary Dataset (WBD)



Hydrologic Units

2-digit *Regions* (22)
avg - 177,560 sq. miles

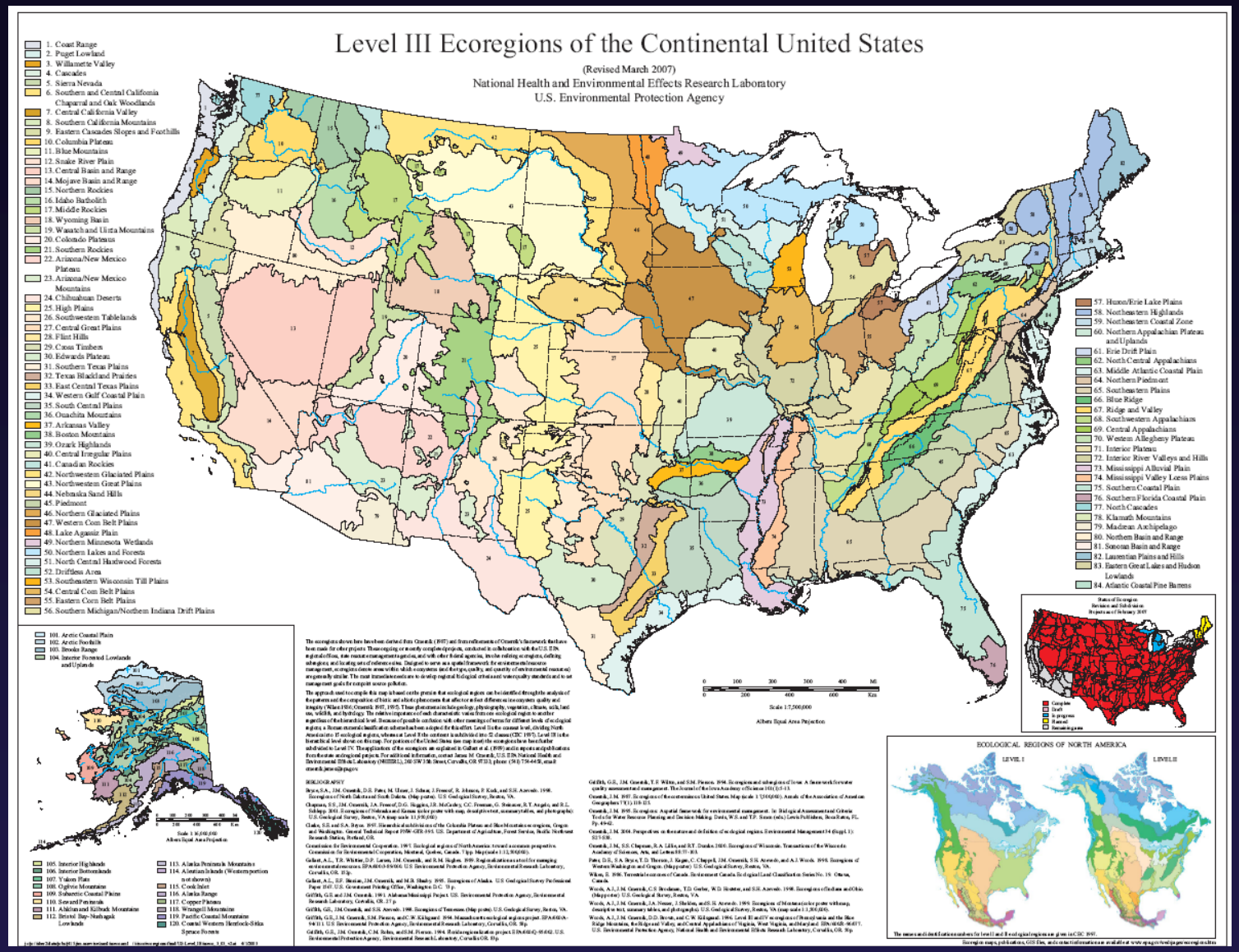
4-digit *Subregions* (222)
avg - 16,800 sq. miles

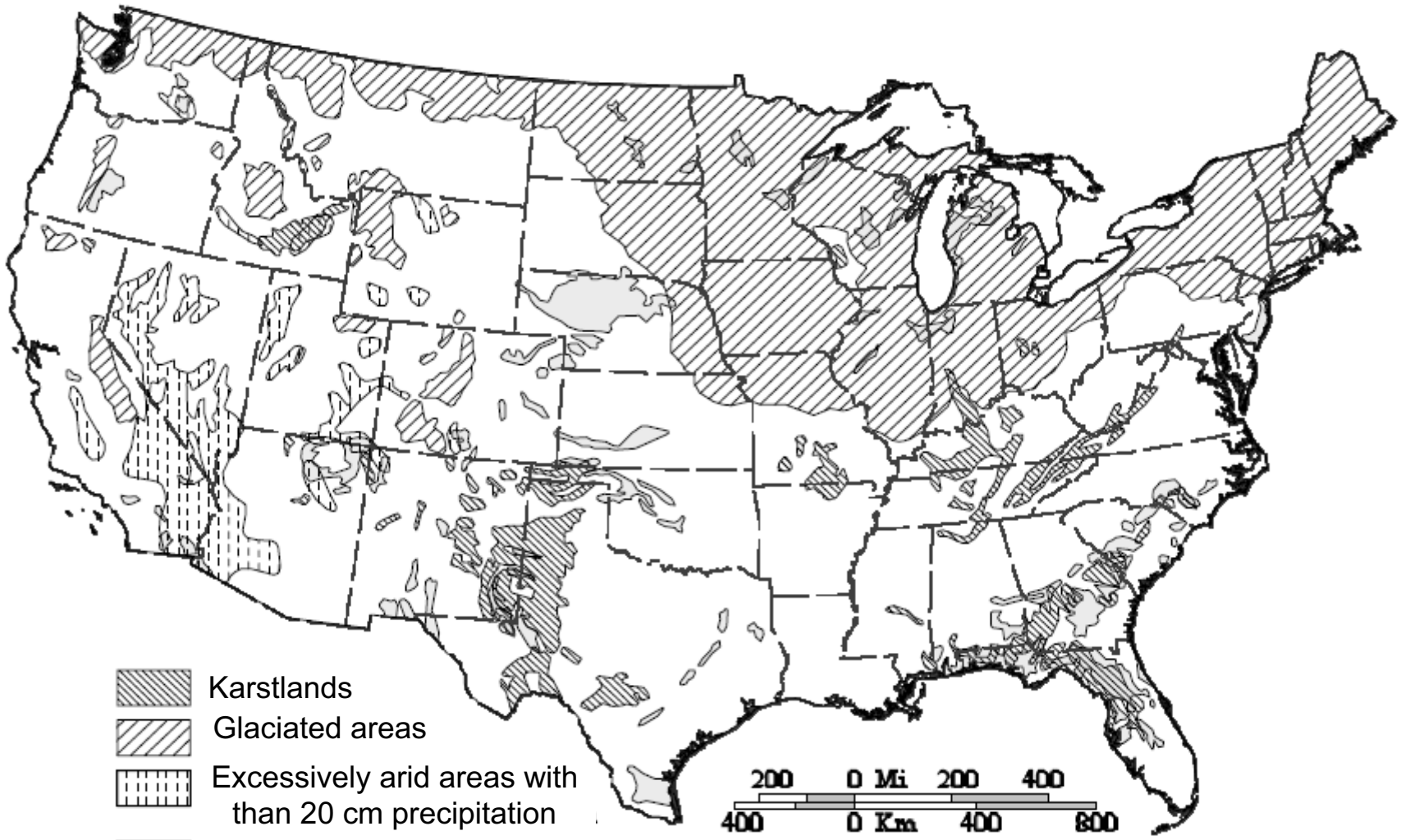
6-digit *Basins* (379)
avg - 10,596 sq. miles

8-digit *Subbasins* (2,267)
avg - 703 sq. miles

10-digit *Watersheds* (est. 22,000)
avg - 40,000 - 250,000 acres

12-digit *Subwatersheds* (est. 160,000)
avg - 10,000 - 40,000 acres


Level III Ecoregions of the Continental United States
(Revised March 2007)
National Health and Environmental Effects Research Laboratory
U.S. Environmental Protection Agency
1. Coast Range
2. Puget Lowland
3. Willamette Valley
4. Cascades
5. Sierra Nevada
6. Southern and Central California Chaparral and Oak Woodlands
7. Central California Valley
8. Southern California Mountains
9. Eastern Cascades Slopes and Foothills
10. Columbia Plateau
11. Blue Mountains
12. Snake River Plain
13. Central Basin and Range
14. Mojave Basin and Range
15. Northern Rockies
16. Idaho Batholith
17. Middle Rockies
18. Wyoming Basin
19. Wasatch and Uinta Mountains
20. Colorado Plateaus
21. Southern Rockies
22. Arizona/New Mexico Plateau
23. Arizona/New Mexico Mountains
24. Chihuahuan Deserts
25. High Plains
26. Southwestern Tablelands
27. Central Great Plains
28. Flint Hills
29. Cross Timbers
30. Edwards Plateau
31. Southern Texas Plains
32. Texas Blackland Prairies
33. East Central Texas Plains
34. Western Gulf Coastal Plain
35. South Central Plains
36. Ouachita Mountains
37. Arkansas Valley
38. Boston Mountains
39. Ozark Highlands
40. Central Irregular Plains
41. Canadian Rockies
42. Northwestern Glaciated Plains
43. Northwestern Great Plains
44. Nebraska Sand Hills
45. Piedmont
46. Northern Glaciated Plains
47. Western Corn Belt Plains
48. Lake Agassiz Plain
49. Northern Minnesota Wetlands
50. Northern Lakes and Forests
51. North Central Hardwood Forests
52. Driftless Area
53. Southeastern Wisconsin Till Plains
54. Central Corn Belt Plains
55. Eastern Corn Belt Plains
56. Southern Michigan/Northern Indiana Drift Plains
57. Huron/Erie Lake Plains
58. Northeastern Highlands
59. Northeastern Coastal Zone
60. Northern Appalachian Plateau and Uplands
61. Erie Drift Plain
62. North Central Appalachians
63. Middle Atlantic Coastal Plain
64. Northern Piedmont
65. Southeastern Plains
66. Blue Ridge
67. Ridge and Valley
68. Southwestern Appalachians
69. Central Appalachians
70. Western Allegheny Plateau
71. Interior Plateau
72. Interior River Valleys and Hills
73. Mississippi Alluvial Plain
74. Mississippi Valley Loess Plains
75. Southern Coastal Plain
76. Southern Florida Coastal Plain
77. North Cascades
78. Klamath Mountains
79. Madrean Archipelago
80. Northern Basin and Range
81. Sonoran Basin and Range
82. Laurentian Plains and Hills
83. Eastern Great Lakes and Hudson Lowlands
84. Atlantic Coastal Pine Barrens
0 100 200 300 400 Mi
0 200 400 600 Km
Scale 1:7,500,000
Albers Equal Area Projection
101. Arctic Coastal Plain
102. Arctic Foothills
103. Brooks Range
104. Interior Forested Lowlands and Uplands
105. Interior Highlands
106. Interior Bottomlands
107. Yukon Flats
108. Ogilvie Mountains
109. Subarctic Coastal Plains
110. Seward Peninsula
111. Aleutian and Kilbuck Mountains
112. Bristol Bay-Nushagak Lowlands
113. Alaska Peninsula Mountains
114. Aleutian Islands (Western portion not shown)
115. Cook Inlet
116. Alaska Range
117. Copper Plateau
118. Wrangell Mountains
119. Pacific Coastal Mountains
120. Coastal Western Hemlock-Sitka Spruce Forests
Scale 1:6,000,000
Albers Equal Area Projection
ECOLOGICAL REGIONS OF NORTH AMERICA
LEVEL I
LEVEL II



(source: Omernik & Bailey, 1997, J. Amer Water Resources Assoc)

Service Areas

Some Approaches

- Watersheds (or Hydrologic Units)
- Other—Landform regions, ecoregions, administrative, combinations
- Primary & Secondary service areas

Why Watersheds?

General understanding that water quantity and quality at a point on a stream reflects aggregate of characteristics of topography up gradient from that point

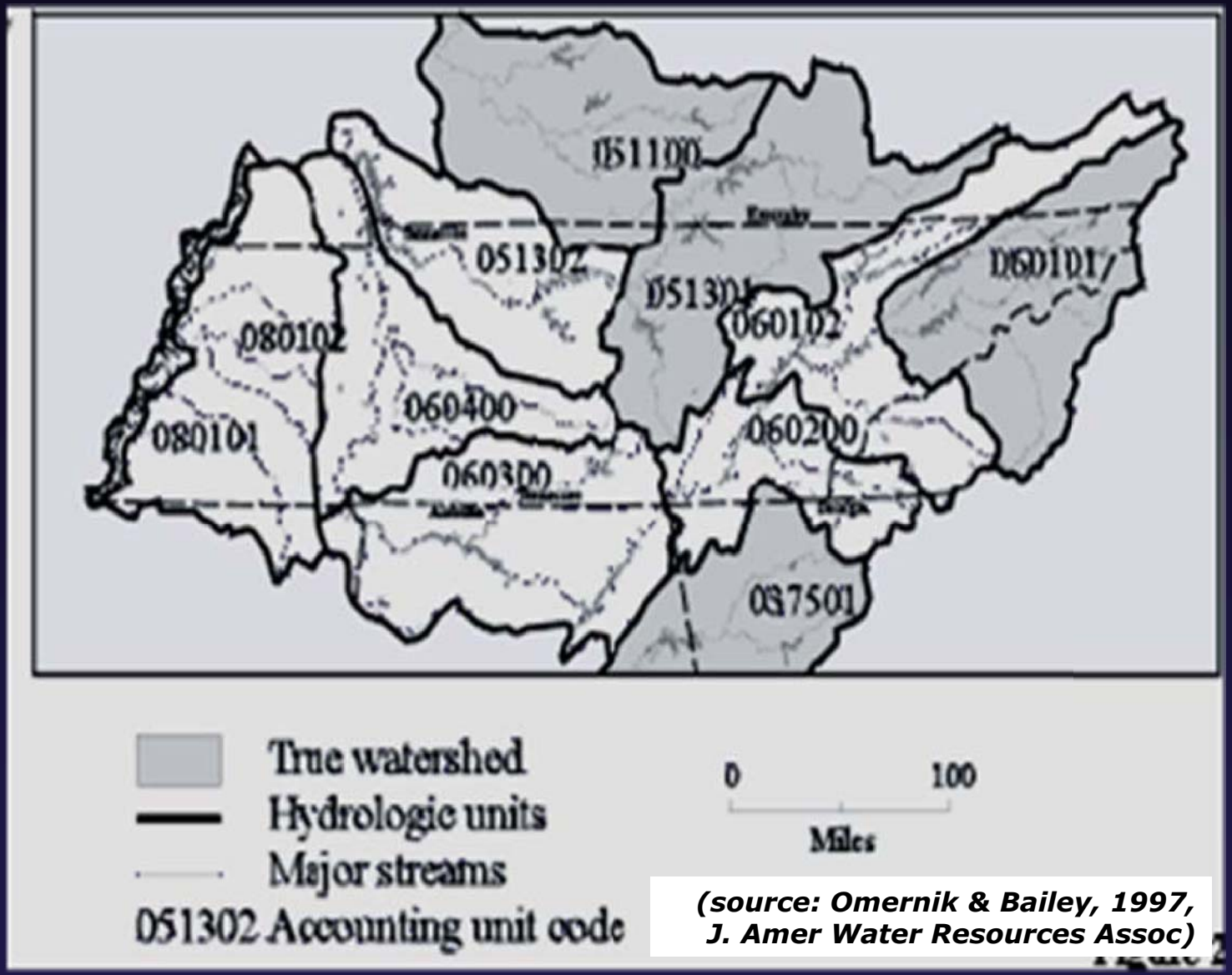
-- thus suitable for spatially organizing ecosystem management or water quality management

[from: http://www.epa.gov/bioiweb1/html/ecoregions.html]

Watershed

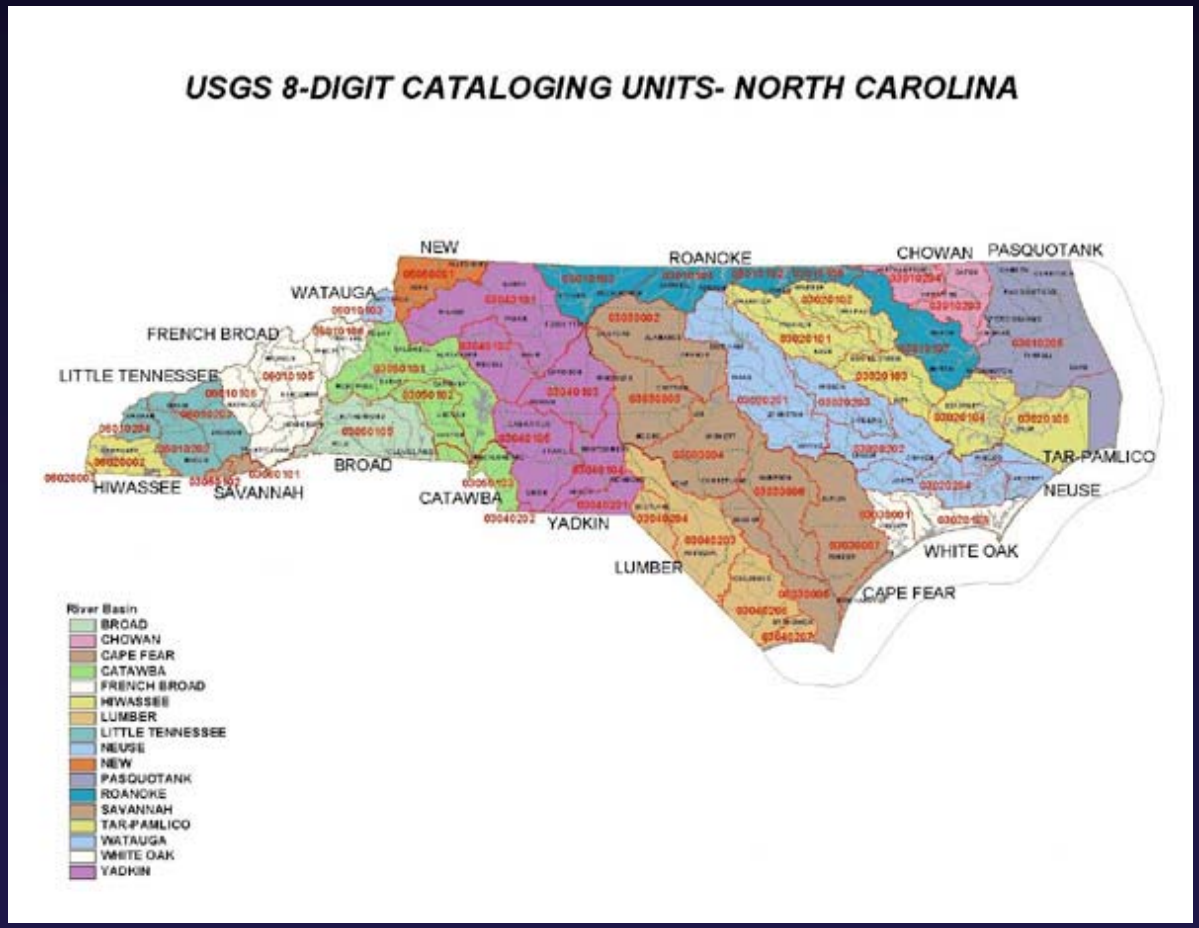
- "…means a land area that drains to a common waterway, such as a stream, lake, estuary, wetland, or ultimately the ocean."

33 CFR 332.2 Definitions



(source: Omernik & Bailey, 1997, J. Amer Water Resources Assoc)

Watersheds: HUC-6s and HUC-8s



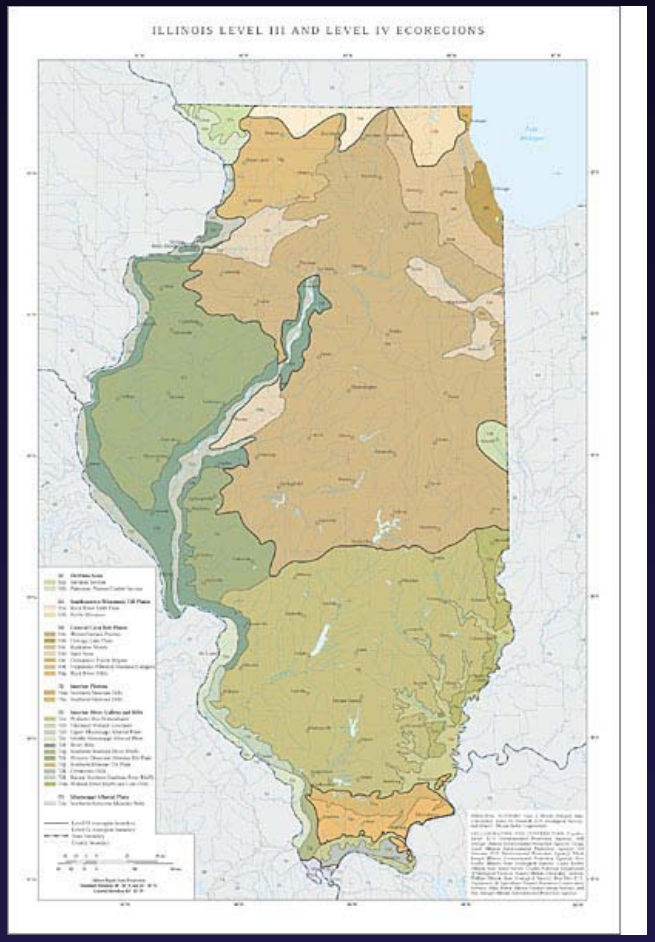
Why Ecoregions?

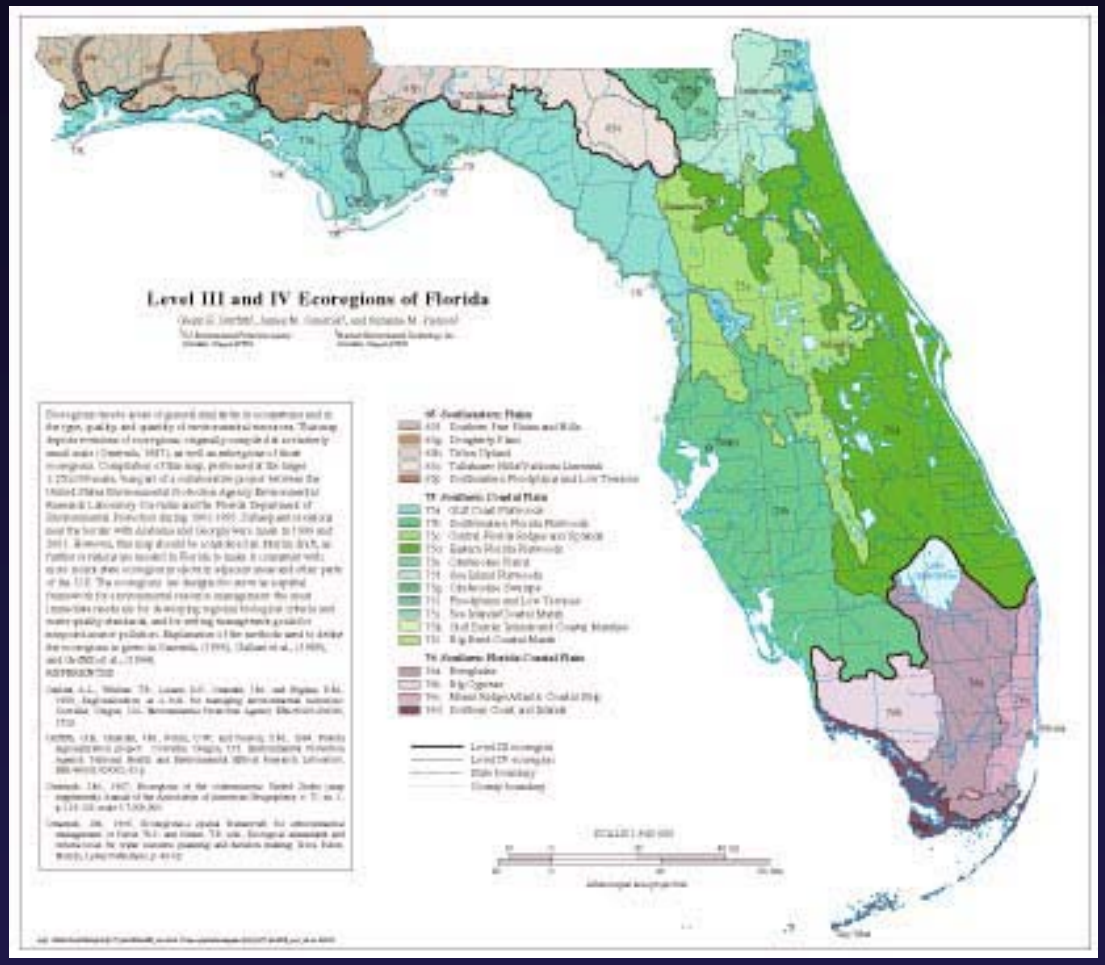
Intended to provide a spatial framework for ecosystem assessment, research, inventory, monitoring, and management

-- delimit large areas within which local ecosystems reoccur more or less throughout region in predictable patterns

[from: http://www.epa.gov/bioiweb1/html/ecoregions.html]

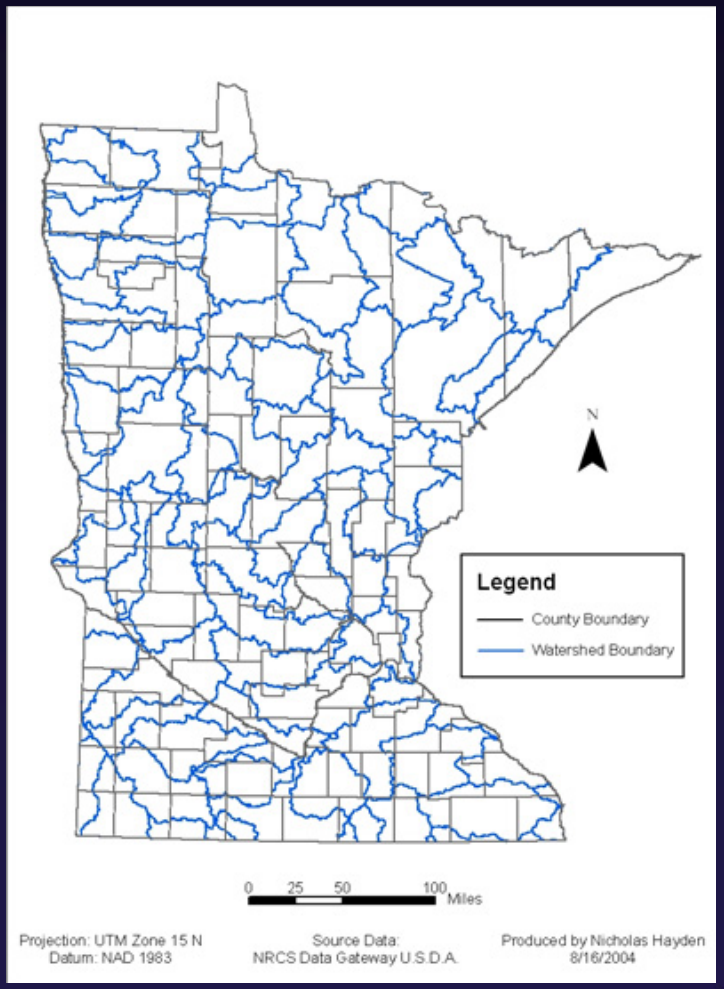
Ecoregions: Omernik (Level IV)



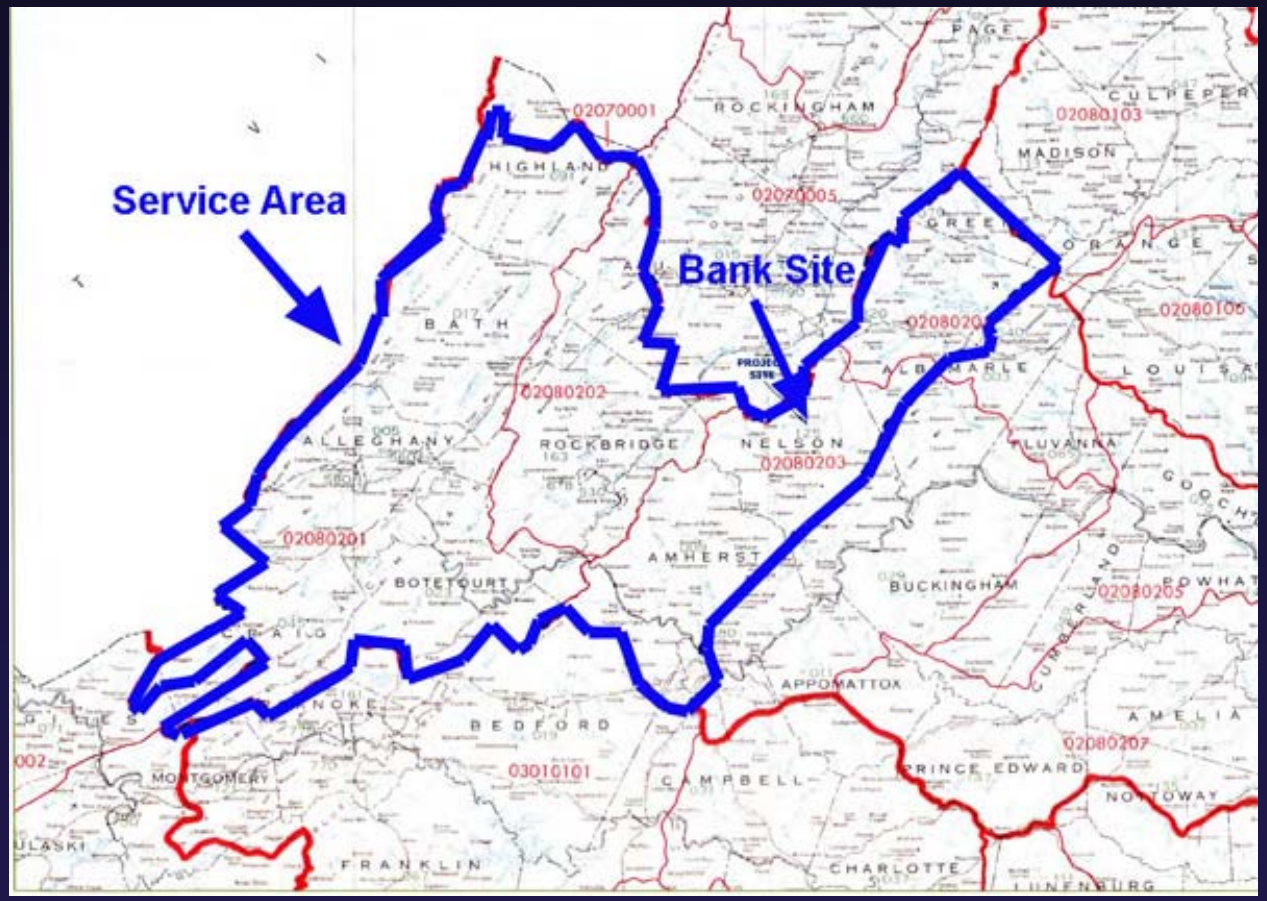


Other – Combination Service Area

- In Minnesota, state law requires that impacts be compensated in the same county or watershed.



Other – VA State Law & physiography



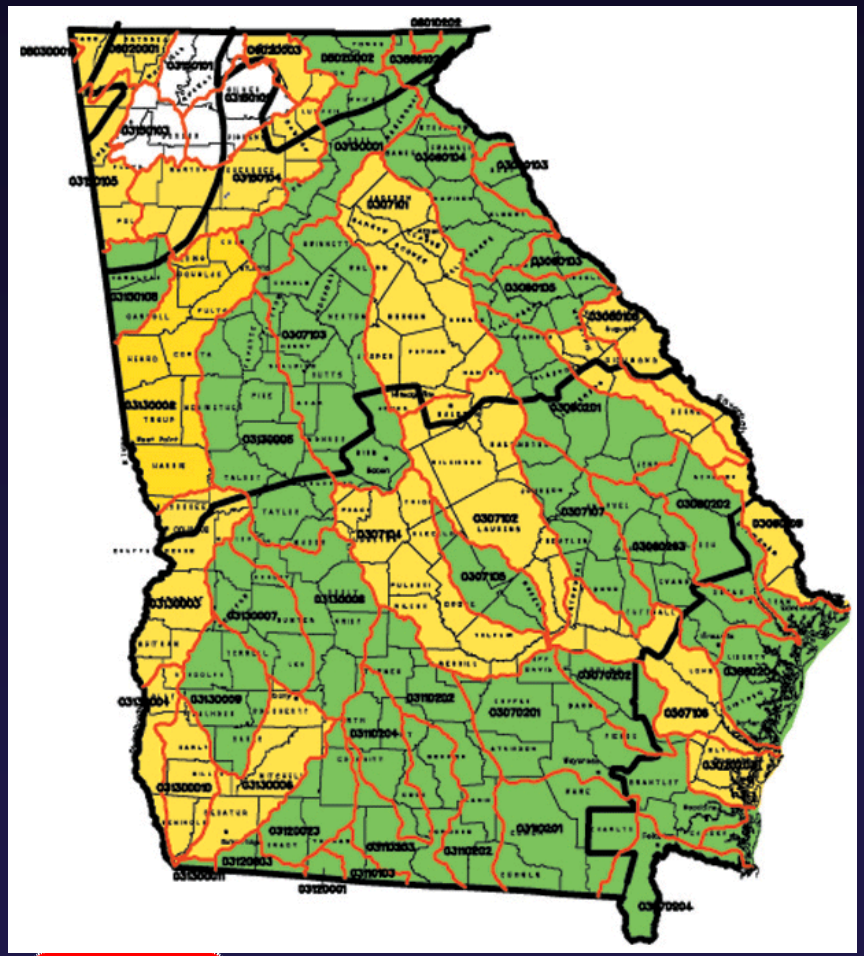
Other Physical Regions

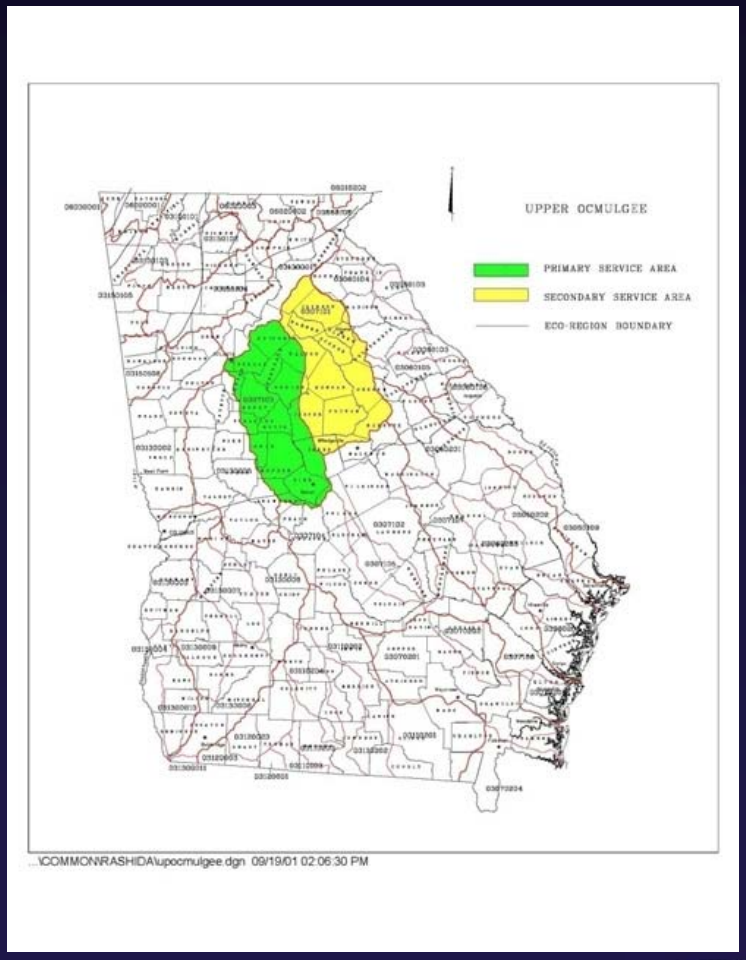
- Littoral Cells

"Compensation for impacts to aquatic resources in coastal watersheds (watersheds that include a tidal water body) should also be located in a coastal watershed where practicable."

[in: Type and Location of Compensatory Mitigation, 33CFR 332.3]

Primary & Secondary Service Areas





Other approaches?

Proximity Factors