

National Biological Assessment  
and Criteria Workshop

Advancing State and Tribal Programs



Coeur d'Alene, Idaho  
31 March – 4 April, 2003

# *History of Bioassessment and Biocriteria in the US - 1994 to 2003*

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# Chronology in the advancement of bioassessment/criteria

1987-89 ⇒ 1994-95 ⇒ 2001-03

# What's significant about the late 80's?

- Reauthorization of the CWA (1987)
- Monitoring - Framework for Change (1987)
- Publication of the RBPs (1989)
- Beginning of EMAP (1989)
- Bioassessment Workshops in 10 EPA Regions (1989)

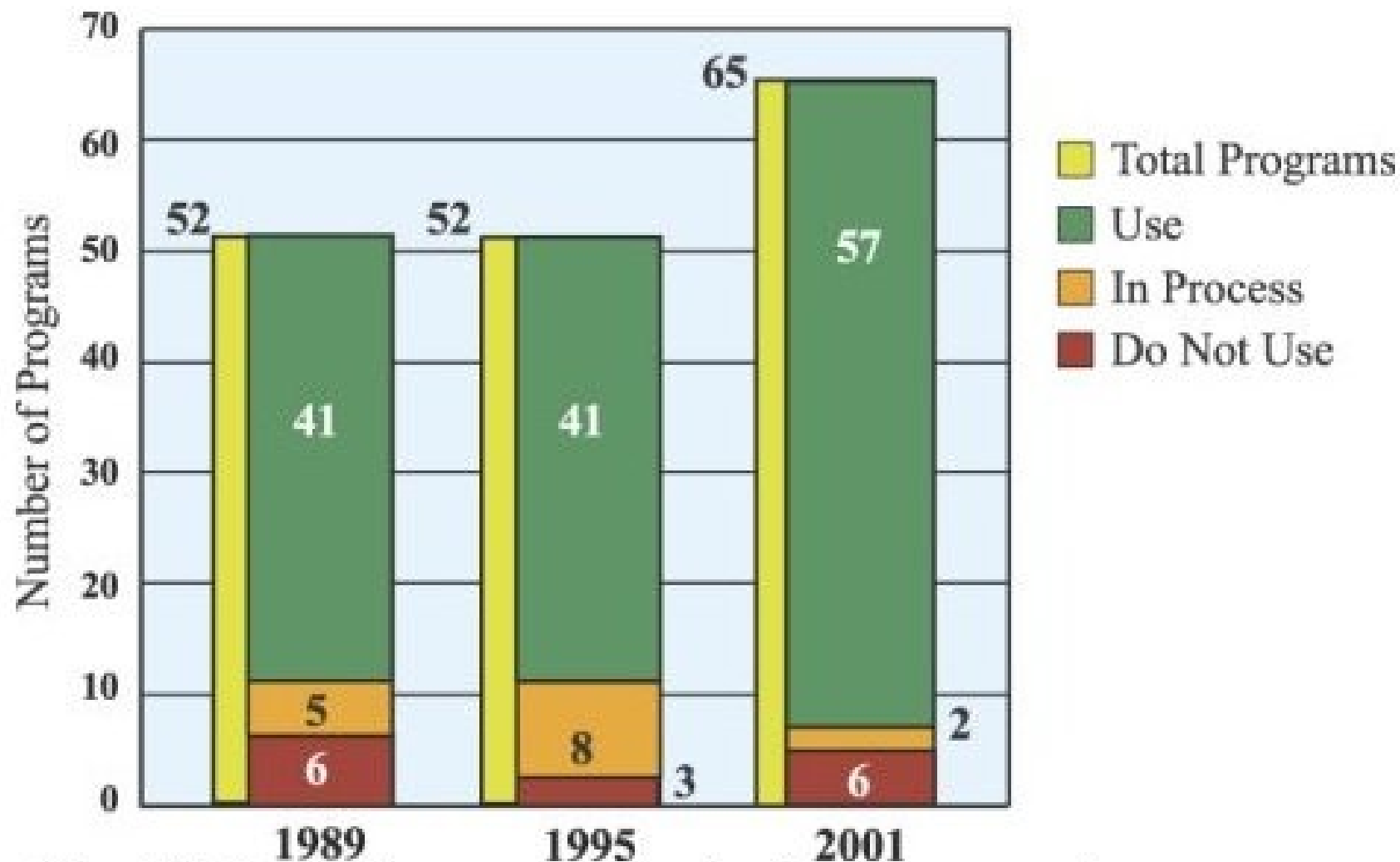


Chart 1. Growth in programs using bioassessment for water quality management.

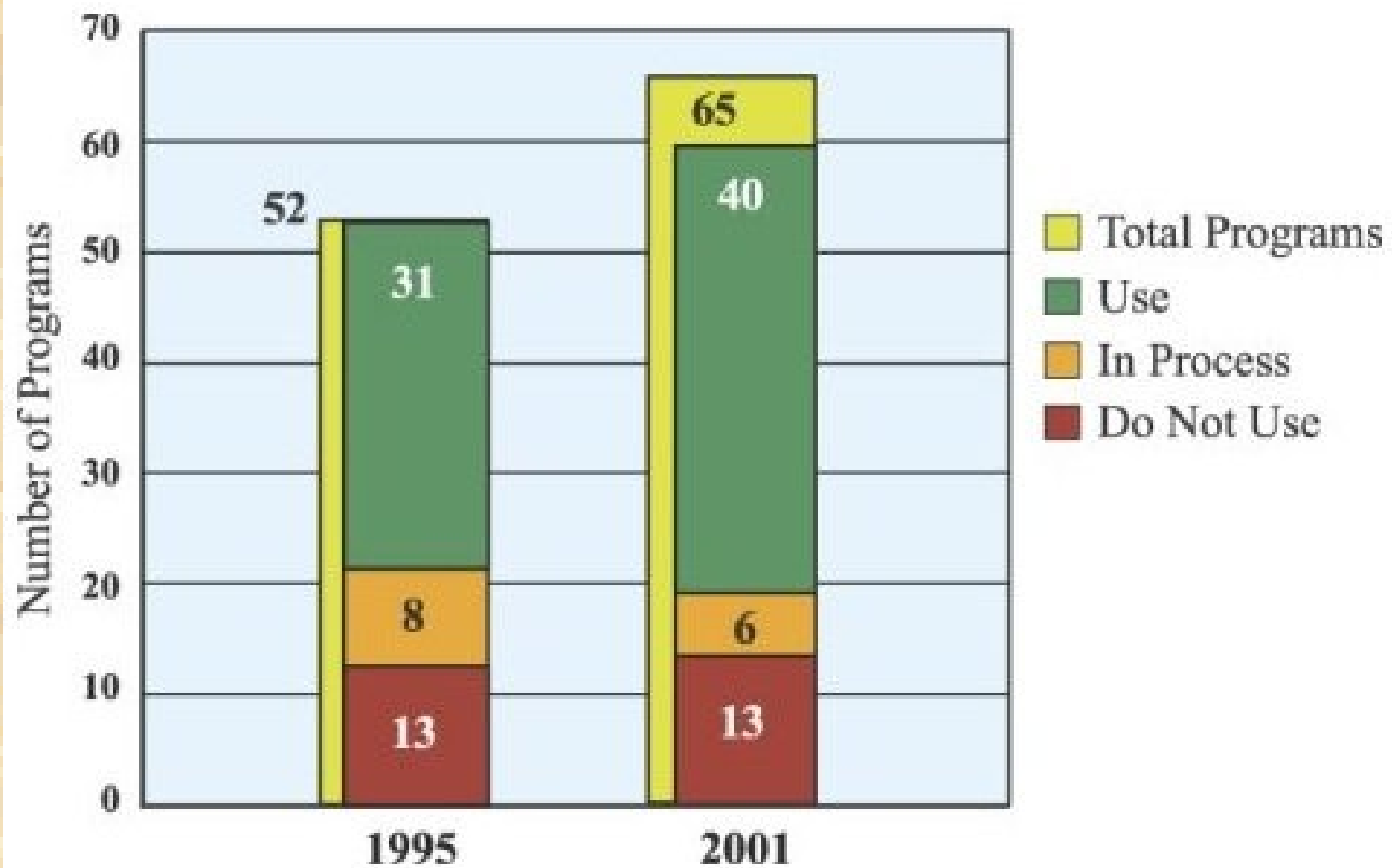


Chart 2. Growth in programs using bioassessment to determine aquatic life use support.

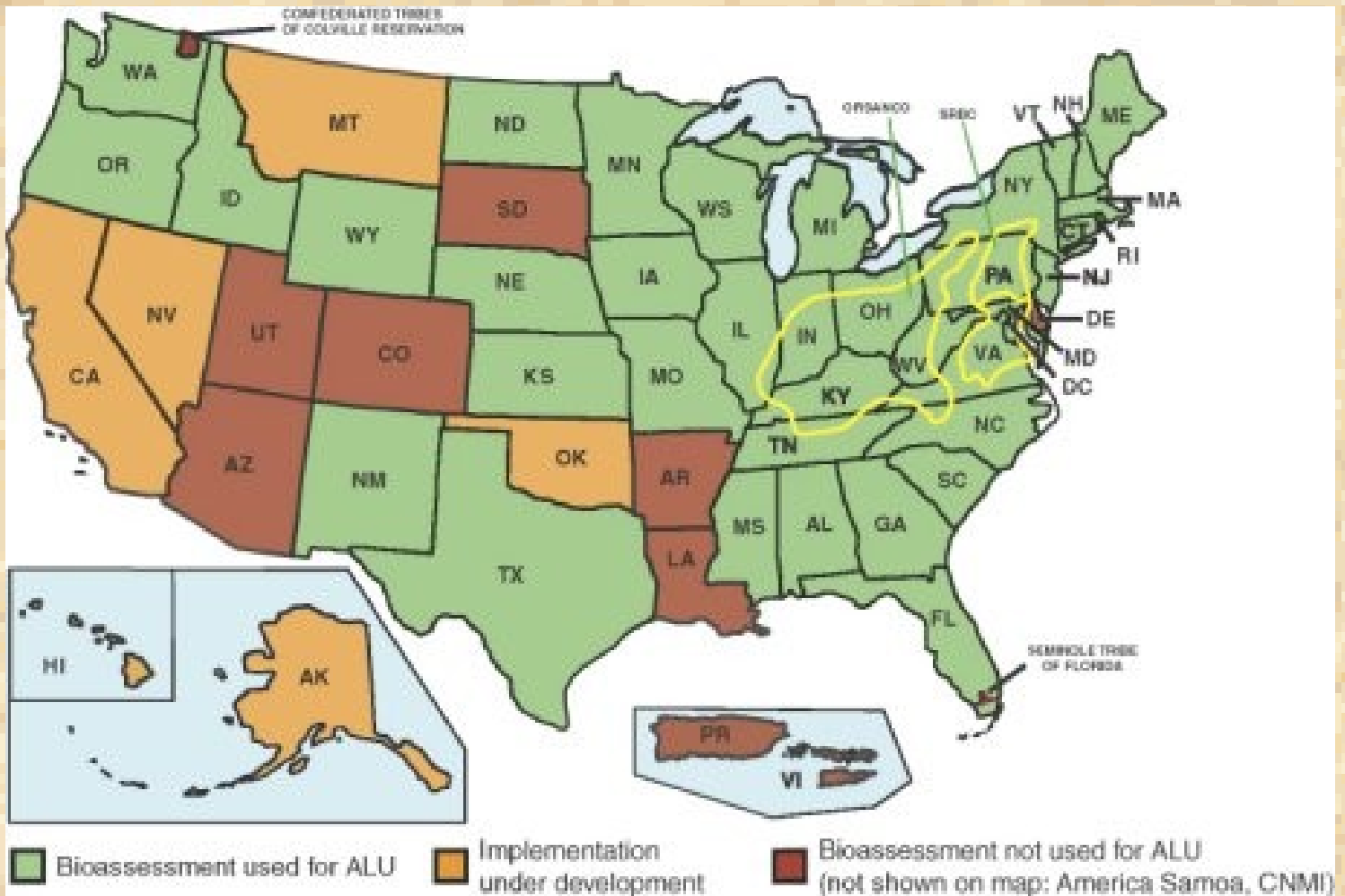
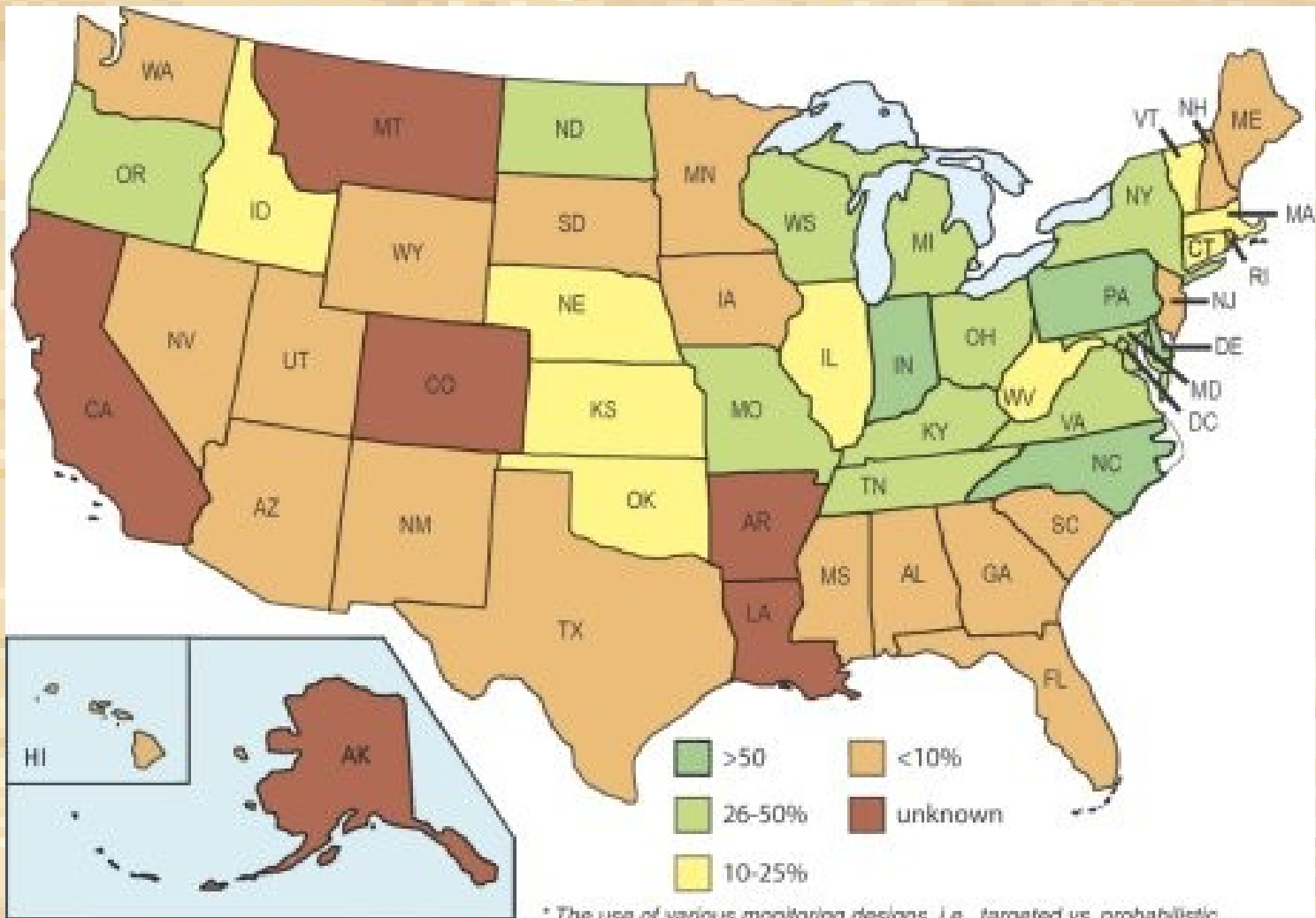


Figure 1b. Use of bioassessment to determine aquatic life use (ALU) for 305(b) reporting.



\* The use of various monitoring designs, i.e., targeted vs. probabilistic, influences the derivation of these numbers.

Figure 1a. Percent of total stream/river miles assessed in each state using bioassessments.

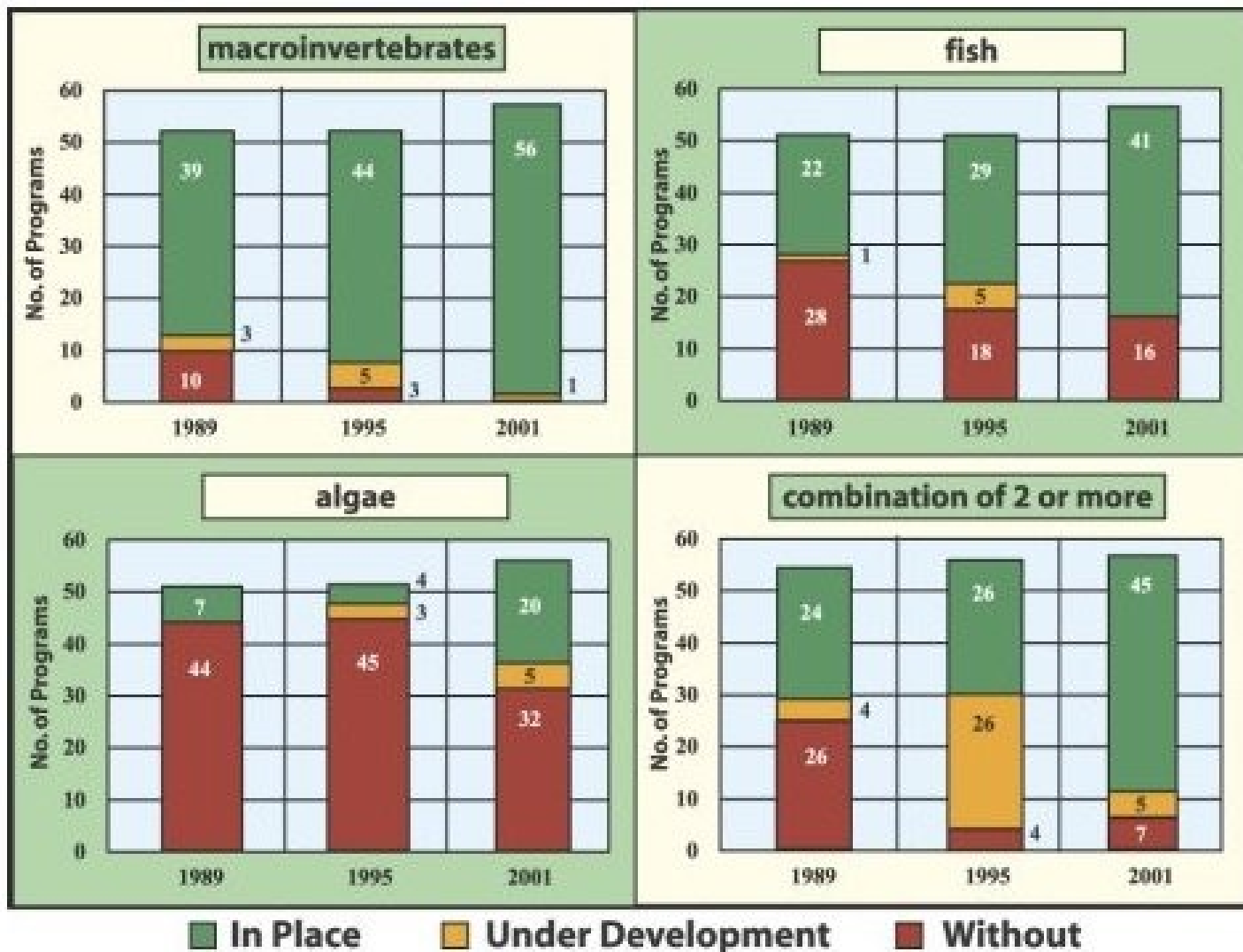
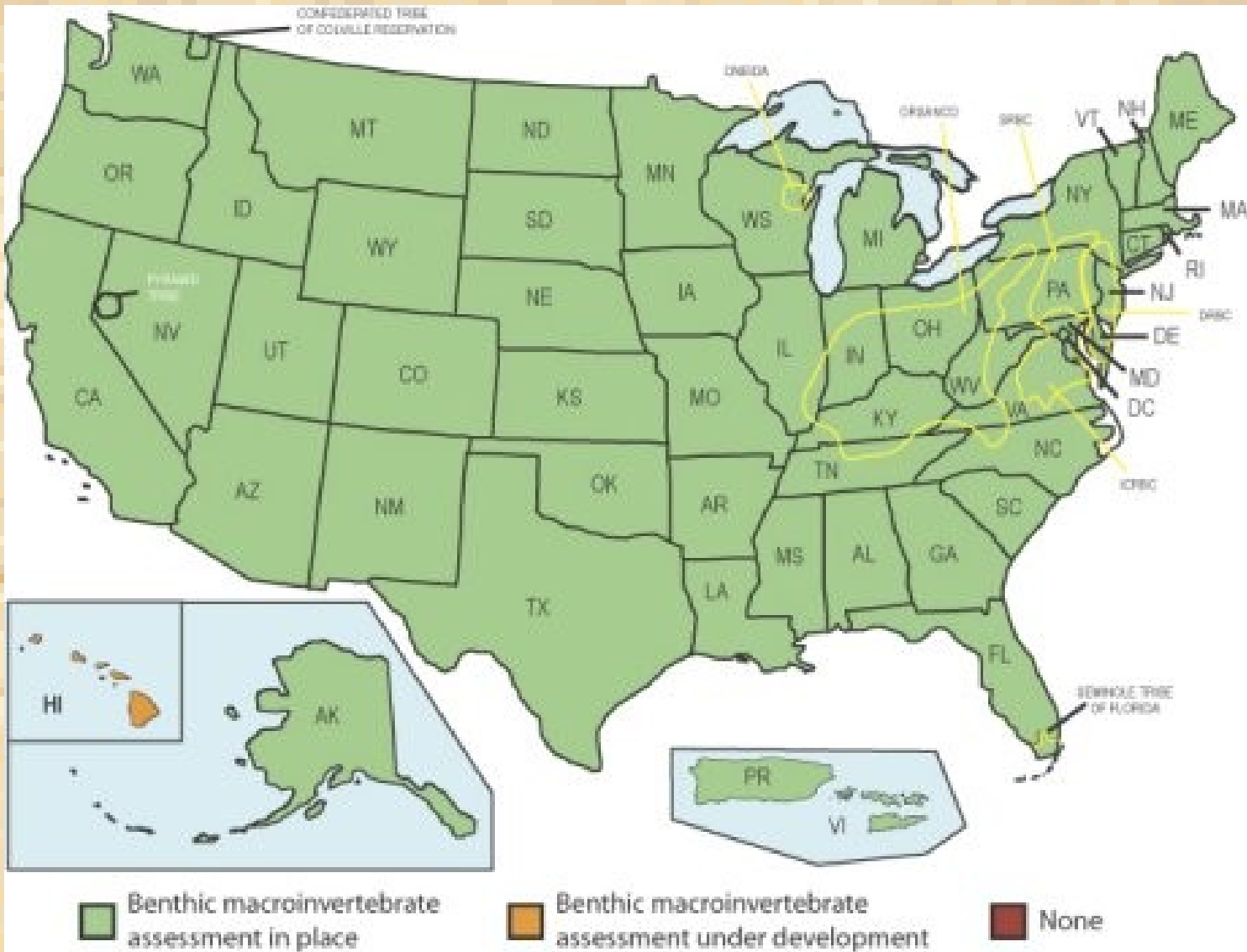
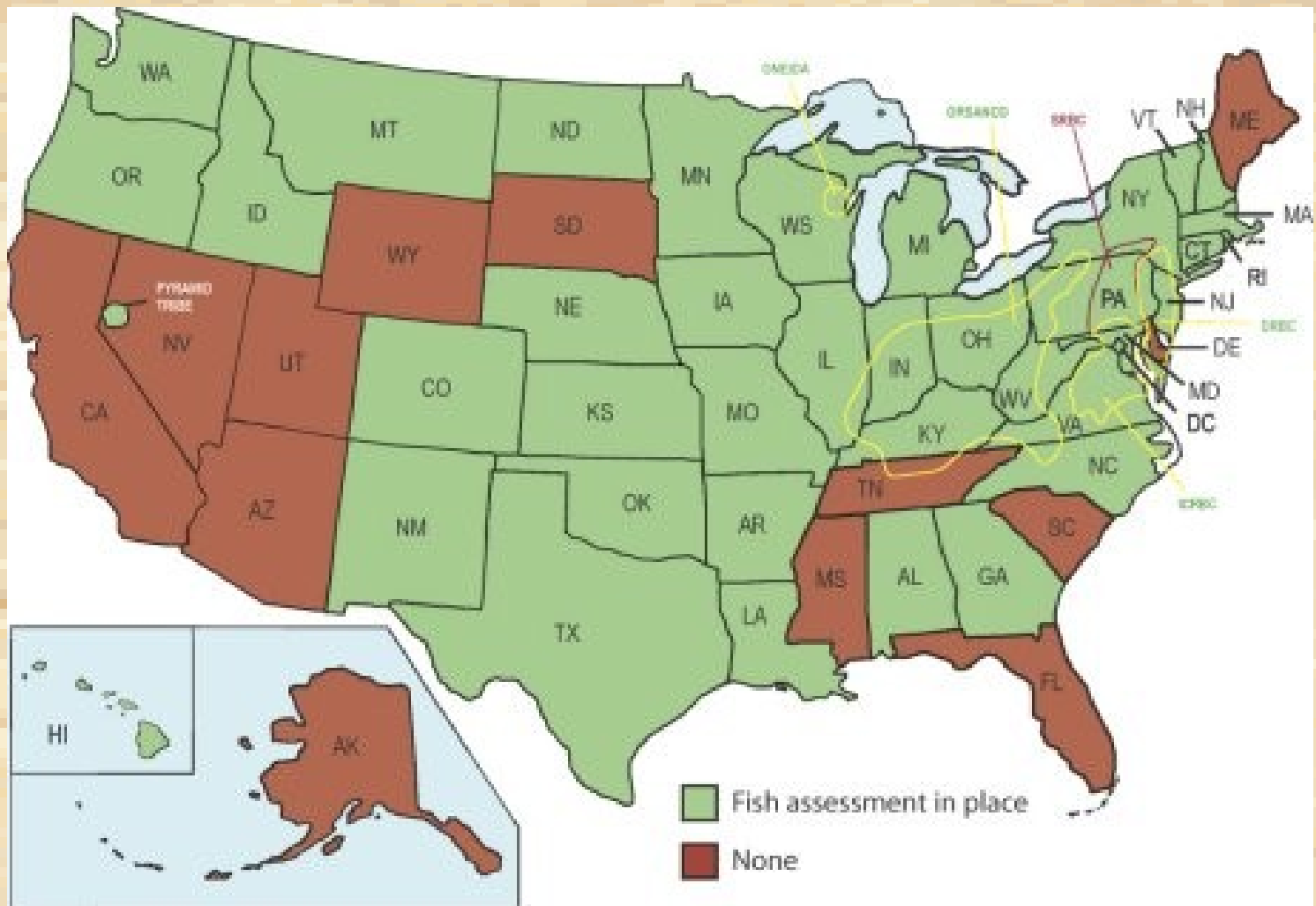


Chart 3. Types of assemblages used for bioassessment.







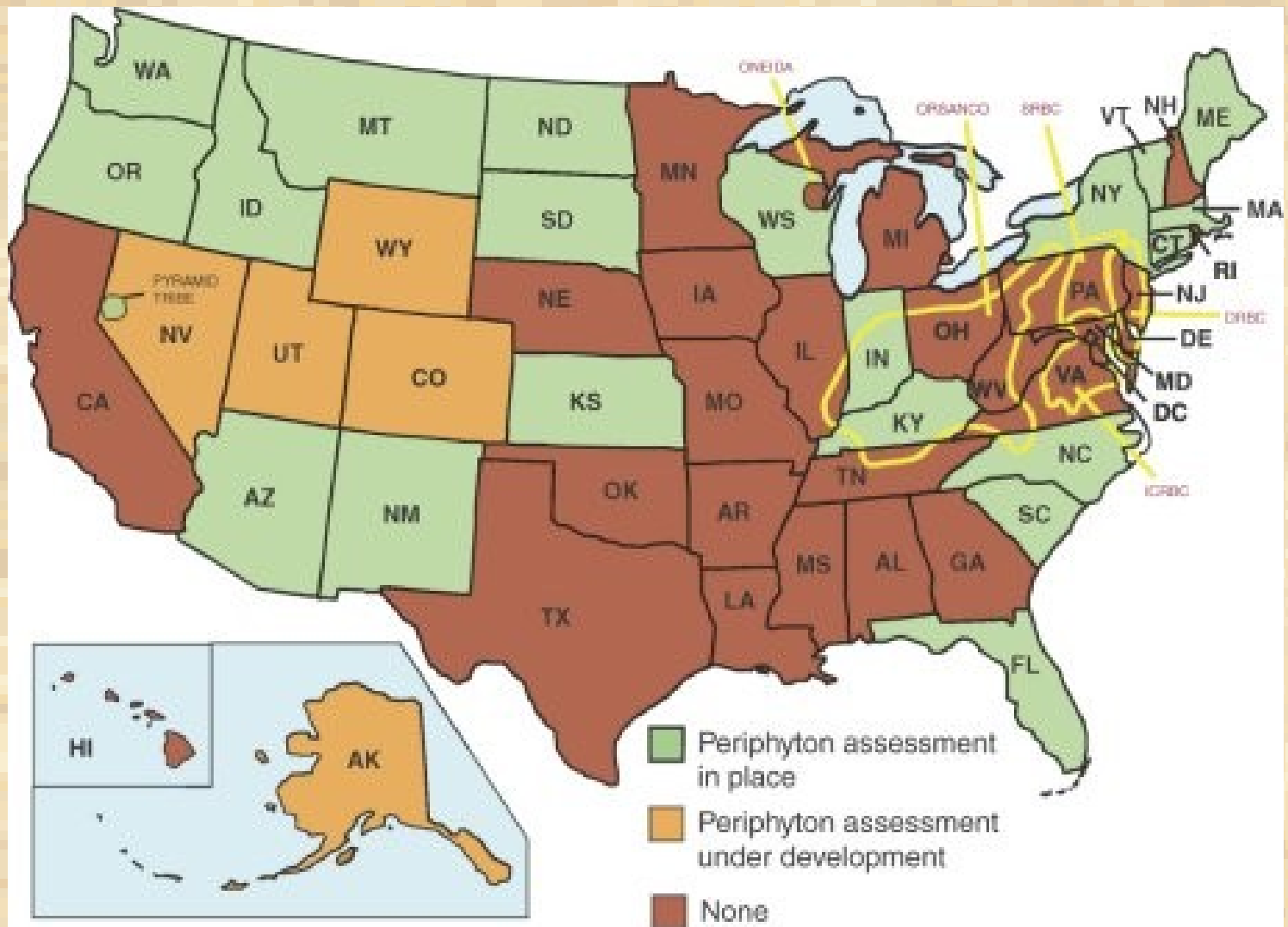


Figure 3c. Periphyton

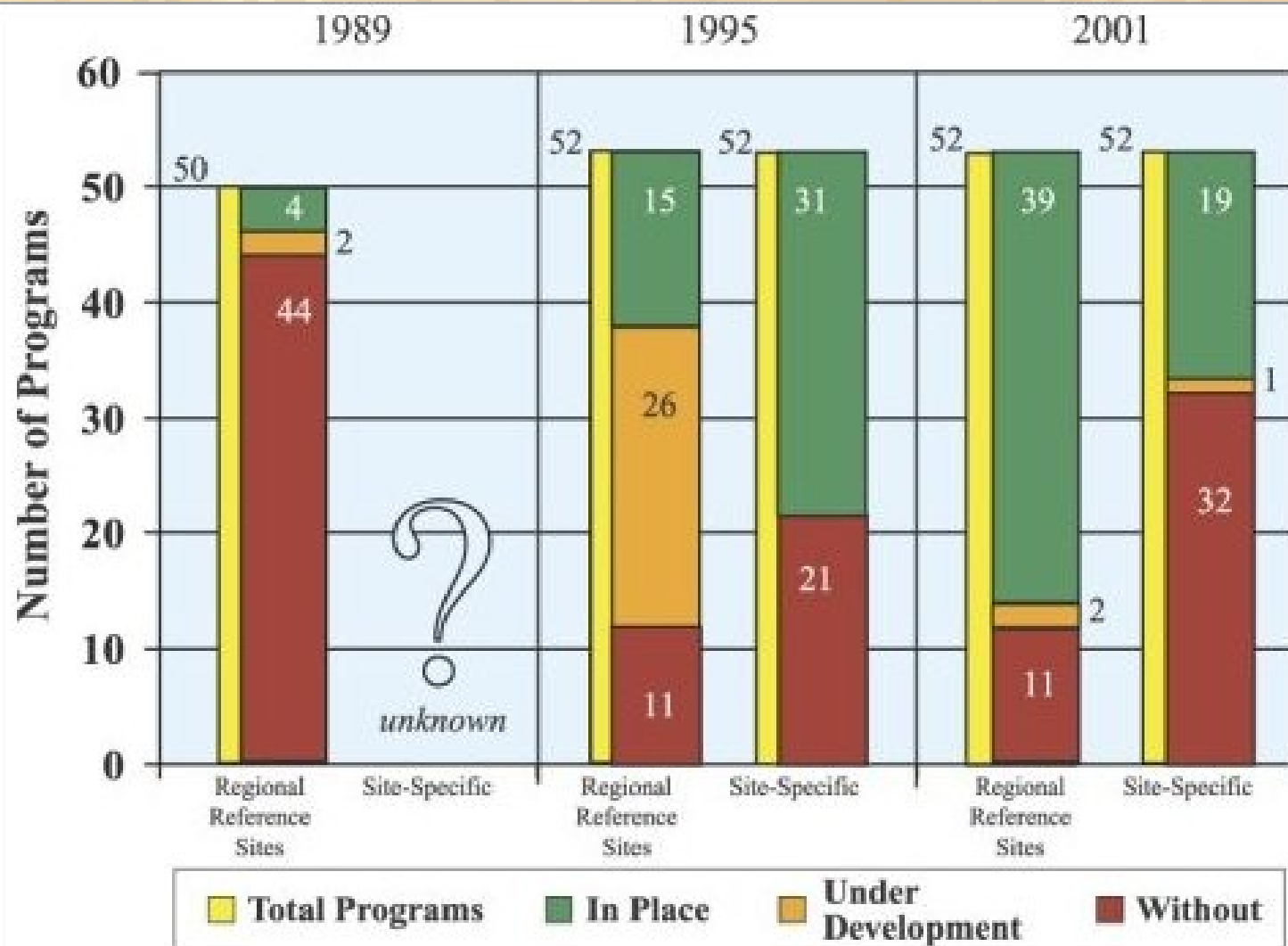


Chart 4. Growth in programs using regional reference sites.

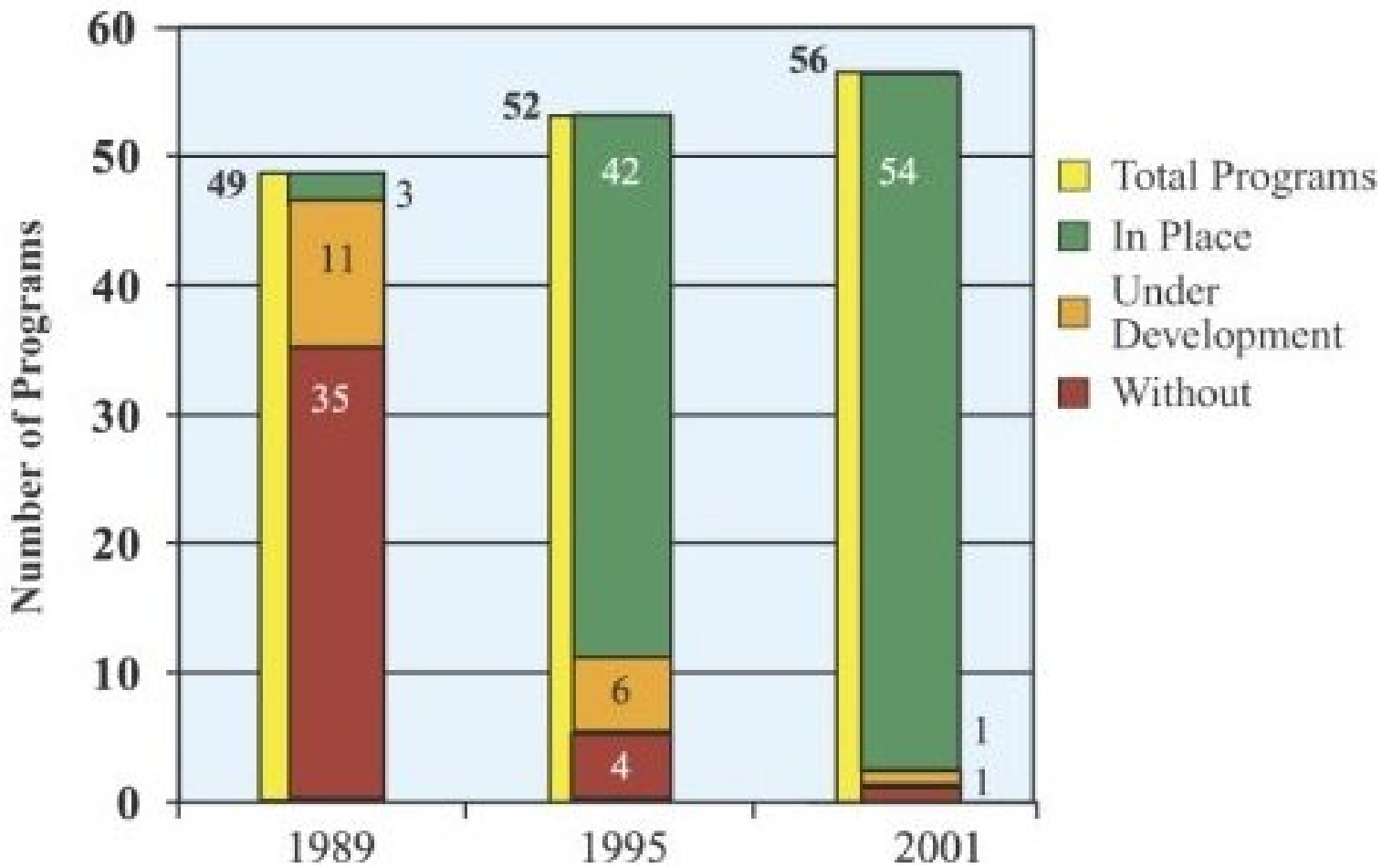
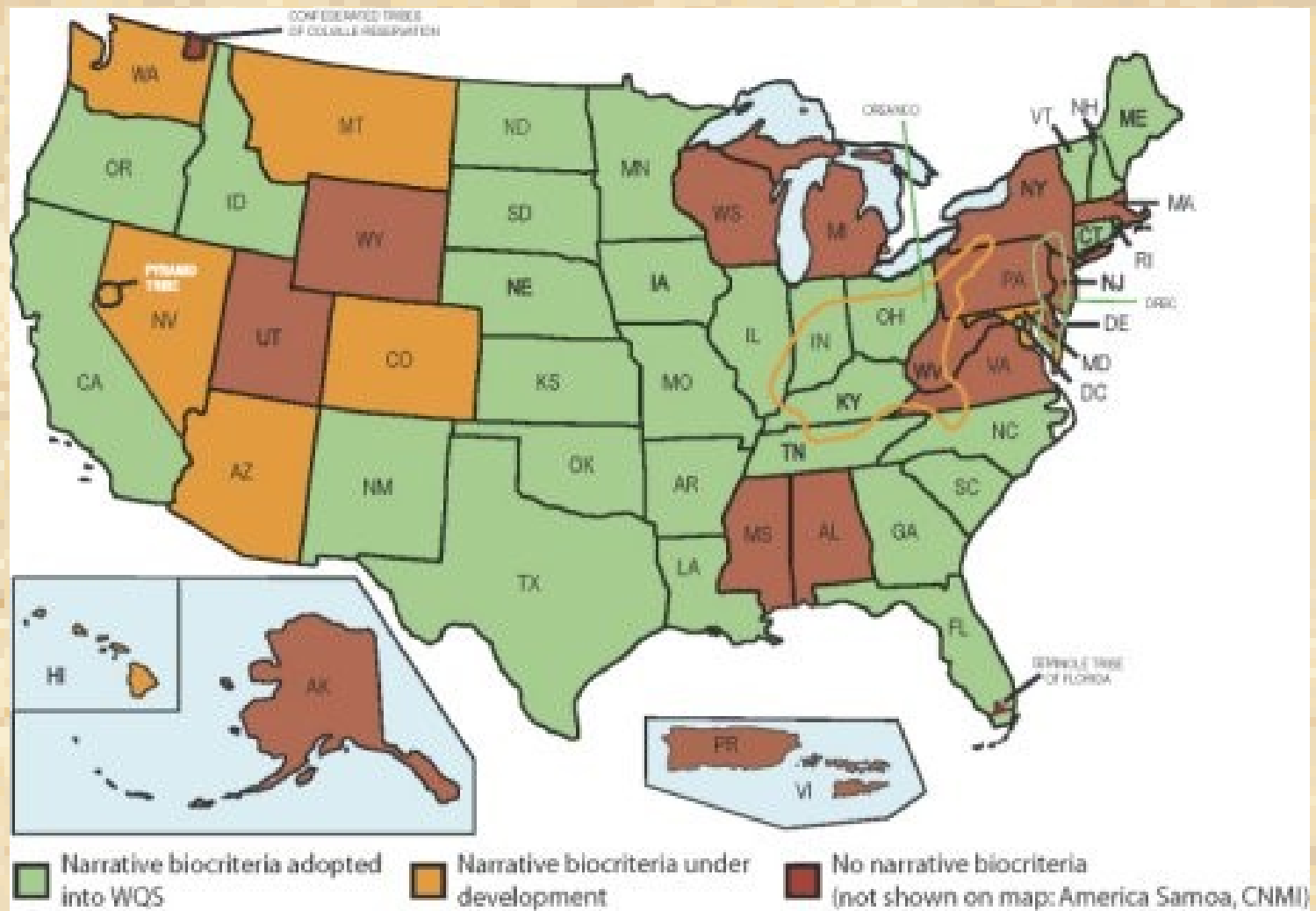


Chart 5. Growth in programs using multiple metrics.



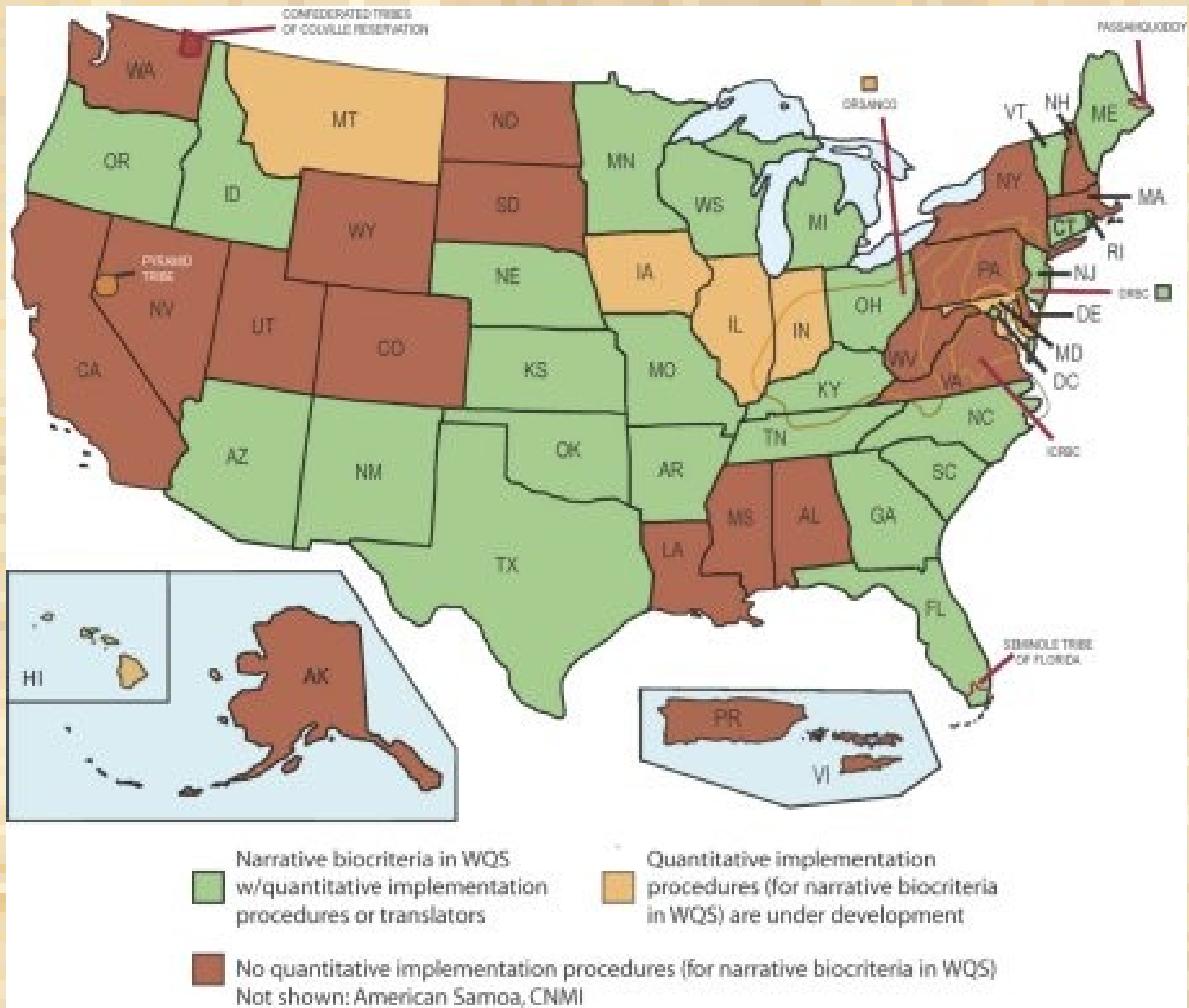
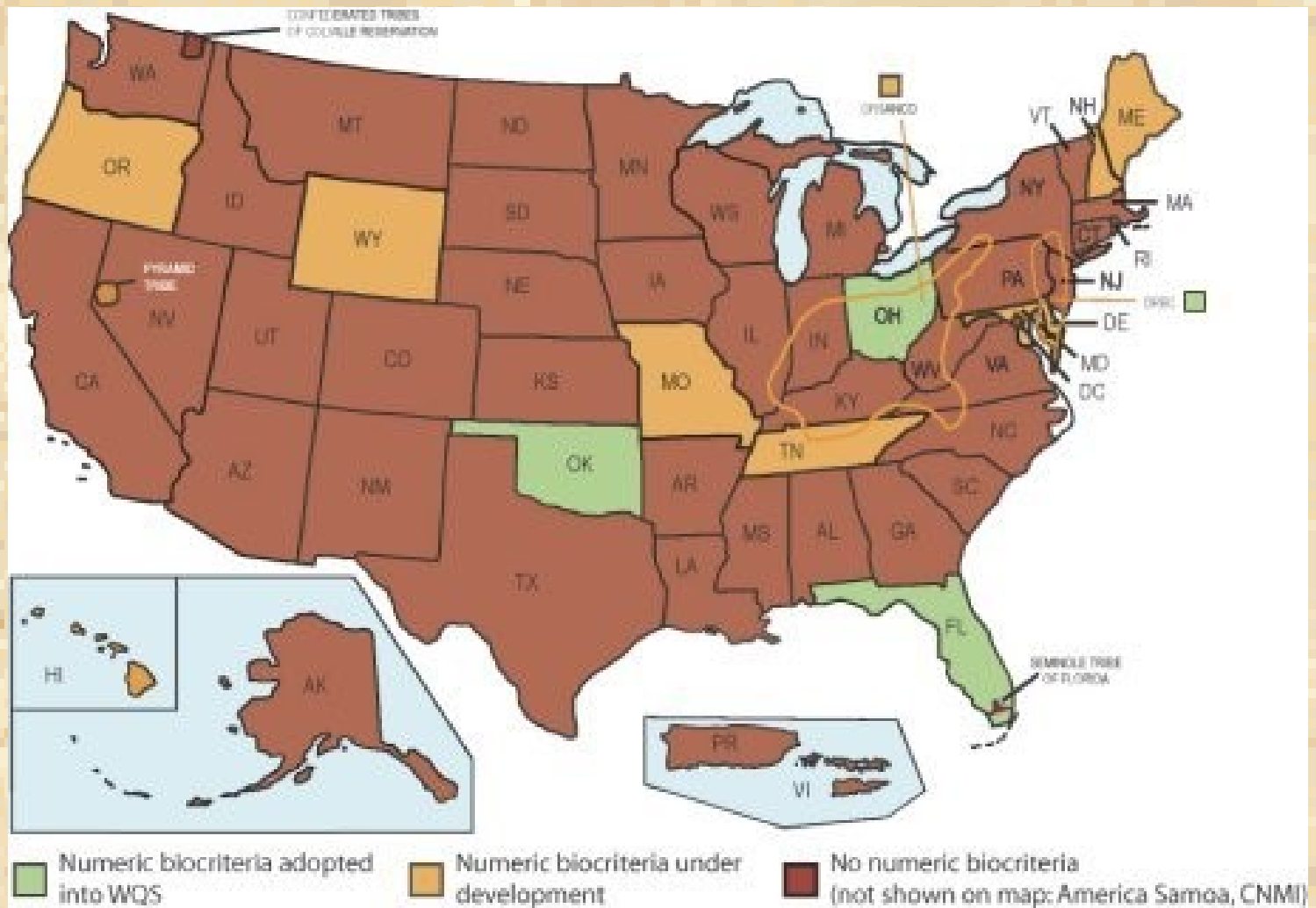


Figure 2b. Narrative biocriteria in WQS with quantitative implementation procedures.



**Figure 2c.** Numeric biocriteria development.



# EMAP

## Environmental Monitoring and Assessment

- 1989 – EPA begins EMAP
  - Estimate “condition” based on biological measurements
  - Estimate “relative ranking of stressors” based on chemical, physical, hydrologic and watershed indicators
  - Use probability survey designs for making inferences from sample sites to the entire “population” of systems (e.g. miles of streams/rivers, number of lakes, area of estuaries)

# EMAP

cont'd

- 1989-1993 Virginia Province Estuaries
- 1990-1994 Northeast Lakes
- 1992-pres. R-EMAP projects begin (new regional projects every 2 years)
- 1993-1997 Mid-Atlantic Streams
- 1992-1996 Gulf Province Estuaries
- 1999-2005 EMAP-West
- 2000-2002 National Coastal Assessment
- 2004 National Stream Assessment

# NAWQA

## 1991-2001 51 Study Units

1991 – 1<sup>st</sup> cycle of intensive invest with 20 units

1994 – additional units

1997 – additional units

1999 – additional units

## 2001-2012 42 Study Units

2001 – 14 units (of the 1<sup>st</sup> cycle of 91-95)

2004 – 14 units

2007 – 14 units

# Current Bioassessment/Criteria Initiatives

- Tiered Aquatic Life Uses and BCG
- Stressor Identification strategies
- Framework for adequate Bioassessment Programs
- Determining Reference Conditions
- Guidance for Ecological Statistics and Analysis
- Ecological Data Comparability
- Bioassessment of Large/Great Rivers; Wetlands